

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

MULLEN AUTOMOTIVE, INC., HYON CHA, and
SHAYAN KHORRAMI,

Plaintiffs,

- against -

IMC FINANCIAL MARKETS, CLEAR STREET
MARKETS LLC, CLEAR STREET LLC, UBS
SECURITIES, LLC, and JOHN DOES 1 THROUGH 10.

Defendants.

Civil Action: 1:23-cv-10637

FIRST AMENDED COMPLAINT

**JURY TRIAL
DEMAND**

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Plaintiffs Hyon Cha and Shayan Khorrami, (collectively, the “Shareholders”), and Mullen Automotive, Inc. (“Mullen” and, together with the Shareholders, “Plaintiffs”), by and through their undersigned attorneys, Warshaw Burstein, LLP and Christian Attar, as and for their complaint against IMC Financial Markets (“IMC”), Clear Street Markets, LLC (a/k/a Summit Securities Group LLC) (“Clear Street Markets”), Clear Street LLC (together with Clear Street Markets, “Clear Street”), UBS Securities, LLC (“UBS” and, together with IMC and Clear Street, the “Known Defendants”), and John Does 1 through 10 (“John Does” and, together with the Known Defendants, “Defendants”), allege upon personal knowledge, information and belief, and an investigation by counsel, as follows:

I. INTRODUCTION

1. This case involves “spoofing,”¹ a form of market manipulation that Defendants used to drive Mullen’s share price downward between November 5, 2021 and November 15, 2023 (the “Relevant Period”).

2. As discussed in depth below, Defendants’ spoofing schemes involve the strategic placement and cancellation of thousands of orders to sell on the Nasdaq Limit Order Book.² These orders to sell—commonly referred to as “Baiting Orders”—were not intended to be executed and had no legitimate economic purpose. Their sole purpose was to create a false

¹ The Securities and Exchange Commission (“SEC”) describes spoofing as the “submission and cancellation of buy and sell orders without the intention to trade in order to manipulate other traders.” (SEC Staff Report on Algorithmic Trading in U.S. Capital Markets August 5, 2020, at *75). The SEC considers spoofing to be a “harmful strategy” that is executed by “strategically placing orders to create the impression of substantial order book imbalances in order to manipulate subsequent prices.” *Id.*

² Nasdaq’s “Limit Order Book” is “[a] record of unexecuted limit orders maintained by the specialist. These orders are treated equally with other orders in terms of priority of execution.” See <https://www.nasdaq.com/glossary/l/limit-order-book> (last visited Mar. 15, 2024).

illusion that the price of Mullen’s securities was trending downward, which would “bait” or “trick” other market participants into entering their own orders to sell. Shortly after placing their Baiting Orders, Defendants executed orders to buy, which are commonly referred to as “Executing Purchases,” at artificially lower prices. Defendants promptly canceled their Baiting Orders.³

3. Defendants’ spoofing schemes were executed through algorithmic trading programs that were utilized on high frequency computer systems. The use of this highly sophisticated technology enabled the Defendants and/or their customers to place and cancel thousands of Baiting Orders in a matter of milliseconds repeatedly during a trading day and throughout a protracted trading period, thereby causing Mullen’s share price to remain artificially depressed.

4. During the Relevant Period, in reliance on the Nasdaq Stock Market (“Nasdaq”) being efficient and free from manipulation, Mullen sold over 5 billion shares—and the Shareholders similarly sold shares—at prices that were artificially depressed due to Defendants’ unlawful spoofing schemes.

5. This lawsuit seeks to hold Defendants primarily liable for their own unlawful principal and agency trading and knowingly or recklessly failing to fulfill their “Gate Keeping” responsibilities of designing, monitoring and enforcing a system of risk management and supervisory controls, policies and procedures that ensured that their traders and/or customers complied with all applicable rules regulations and laws, including Sections 9(a) and Section 10(b) of the Securities Exchange Act of 1934, Rule 10(b)(5)(a) and (c), and the common law.

³ As discussed below, this simplified version of a spoof represents only one permutation of the manner through which Defendants manipulated the share price of Mullen through the use of Baiting Orders. *See, infra*, ¶¶ 54, 55.

II. THE PARTIES

A. Plaintiff Mullen

6. Mullen is an American electric vehicle manufacturer. It is incorporated in the State of Delaware, with its principal place of business in Brea, California. Mullen's securities are currently listed on Nasdaq under the "MULN" ticker symbol, and have been traded on Nasdaq, NYSE Arca, and BATS, as well as other electronic execution venues, all of which are either located in—or conduct business operations in—New York City.

7. As set forth below, Mullen sold or issued for value Mullen shares during the Relevant Period.

B. Plaintiff Hyon Cha

8. Hyon Cha is an individual investor who sold Mullen shares during the Relevant Period and resides at 5136 Rowan Dr., San Ramon, CA 94582.

C. Plaintiff Shayan Khorrami

9. Shayan (a/k/a "Shawn") Khorrami is an individual investor who sold Mullen shares during the Relevant Period and resides at 1450 Wentworth Avenue, Saint Johns, FL 32259.

D. Defendant IMC

10. IMC is an Illinois limited liability company with its principal place of business in Illinois. It is a registered broker-dealer and a market maker in MULN.

11. IMC conducted continuous activity in New York County, directly related to these claims, by employing high speed algorithmic computer systems to route orders and execute trades of Mullen shares on exchanges located in New York County.

E. Defendants Clear Street Markets and Clear Street LLC

12. Clear Street Markets is a Delaware limited liability company with its principal place of business in New York County. It is a registered broker-dealer and a market maker in MULN.

13. Clear Street Markets conducted continuous activity in New York County, directly related to these claims, by employing high speed algorithmic computer systems to route orders and execute trades of Mullen shares on exchanges located in New York County.

14. Clear Street Markets previously accepted and consented to findings by the Nasdaq and the BZX exchanges that it had failed to implement automated surveillance to detect and prevent layering or spoofing, and as a result, Clear Street Markets failed to have a supervisory system reasonably designed to ensure compliance with the securities laws.⁴

15. Clear Street LLC is a Delaware limited liability company with its principal place of business in New York County. Clear Street LLC is the majority owner and sole Class A member of Clear Street Markets. Clear Street LLC controls Clear Street Markets.⁵ Clear Street LLC is a registered broker-dealer and, to the extent it was not a registered market maker in MULN, Clear Street LLC functioned as an indirect market maker through its control of its Clear Street Markets.

⁴ See *The NASDAQ Stock Market LLC*, Letter of Acceptance, Waiver and Consent, No. 2012035187502, June 19, 2019 (https://www.nasdaqtrader.com/content/marketregulation/NASDAQ/DisciplinaryActions/WBPX_NQ_2019.pdf); *CBOE BZX Exchange Inc.*, Letter of Acceptance, Waiver and Consent, No. 2012035187502, June 17, 2019 (https://cdn.cboe.com/resources/regulation/disciplinary/2012/WBPX-Cboe-BZX-2012035187504-AWC_Redacted.pdf).

⁵ See https://files.brokercheck.finra.org/firm/firm_159283.pdf at pp. 3-4.

16. Clear Street LLC conducted continuous activity in New York County, directly related to these claims, by employing high speed algorithmic computer systems to route orders and execute trades of Mullen shares on exchanges located in New York County.

17. Upon information and belief based on Plaintiffs' analysis of publicly available trade and order data—discussed at length below—Clear Street Markets and Clear Street LLC conspired to jointly participate in the spoofing schemes (“Clear Street spoofing”) alleged in this First Amended Complaint and are thus jointly and severally liable for all Clear Street spoofing.

F. Defendant UBS

18. UBS is a Delaware limited liability company with its principal place of business in New York County. It is a registered broker-dealer and a market maker in MULN.

19. UBS conducted continuous activity in New York County, directly related to these claims, by employing high speed algorithmic computer systems to route orders and execute trades of Mullen shares on exchanges located in New York County.

20. UBS has previously consented to findings of fact by the CFTC that UBS, by and through the act of precious metal traders, engaged in unlawful spoofing.⁶

G. Defendants John Does

21. John Does 1 through 10 are entities—including but not limited to market makers, broker-dealers, subsidiaries, affiliates, and sister companies of the Defendants, and Defendants' customers—whose identities are currently unknown, that unlawfully participated in the scheme

⁶ Order Instituting Proceedings Pursuant to Section 6(c) and (d) of the Commodity Exchange Act, Making Findings and Imposing Remedial Sanctions, In re *UBS AG*, CFTC No. 18-07 (Jan. 29, 2018) (<https://www.cftc.gov/sites/default/files/idc/groups/public/@lrenforcementactions/documents/legalpleading/enfusbagorder012918.pdf>).

to manipulate the trading and market price of Mullen securities through spoofing during the Relevant Period.

22. John Does 1 through 10 conducted continuous activity in New York County, directly related to these claims, by employing high speed algorithmic computer systems to route orders and execute trades of Mullen shares on exchanges located in New York County.

III. JURISDICTION AND VENUE

23. This Court has jurisdiction over the subject matter of this action pursuant to Section 27 of the Exchange Act [15 U.S.C. §78aa]; and Title 28 of the United States Code [28 U.S.C. § 1331].

24. This Court has personal jurisdiction over each Defendant, who maintained its principal place of business in this District, conducted a substantial part of the events asserted in this First Amended Complaint in this District, and/or directed its fraudulent activity into this District by manipulating the share price of MULN stock on Nasdaq, which is located in this District. The unlawful acts committed by each Defendant have had a direct and substantial impact on the market price of Mullen shares traded in this District in the United States.

25. Venue is proper in the Southern District of New York pursuant to 28 U.S.C. § 1391 and Section 27 of the Exchange Act, in that many of the acts, transactions and occurrences alleged herein occurred in this District, and each Defendant conducted business here in connection with the events described herein. Defendants directly or indirectly made use of the means or instrumentalities of interstate commerce including the mails in connection with the conduct alleged herein.

IV. HOW SPOOFING WORKS

26. In an efficient stock market that is free from manipulation, the prices of securities are determined by the natural forces of supply and demand—the greater the demand or lower the supply, the higher the price. Conversely, the lower the demand or greater the supply, the lower the price.

27. The objective of a spoofing scheme is to distort publicly available information concerning the actual supply and demand of a company's securities by injecting false and misleading information into the marketplace.

28. Specifically, a spoofer—often utilizing high-frequency trading computer systems that operate algorithmic trading programs to maximize the speed of their market access and the execution of their trading strategies—creates a false illusion of excess supply or demand by placing Baiting Orders into the Limit Order Book. These Baiting Orders are **not intended to be executed and have no legitimate economic purpose**. Instead, the Baiting Orders are placed solely to create the illusion of market interest, which is intended to generate a response from other market participants to follow the artificial selling or buying trend that the Baiting Orders were intended to create.

29. Typically, a trader buys when he or she thinks the price of a security is likely to go higher and sells when they think the price of a security will go lower. However, one of the clear signs of spoofing is a rapid reversal of trading direction—for example, where a market participant places many sell orders, followed by a buy order, followed by the cancellation of the sell orders. This type of behavior strongly suggests that the original sell orders were not intended to be executed, and instead, were merely a ploy to drive the price downwards to “buy low.”

30. Spoofing can be used to artificially inflate or lower the price of a security. If the spoofer's goal is to drive the price down, the spoofer enters Baiting Orders to sell, which are intended to "bait" or "trick" investors into entering their own sell orders to minimize or avoid suffering losses in a downward trending market. Shortly after the spoofer places the Baiting Orders to sell—and after those Baiting Orders have lured unsuspecting market participants into placing their own orders—the spoofer places orders to buy, or "Executing Purchases," on the opposite side of the Limit Order Book. These Executing Purchases to buy are intended to be executed at the artificially low prices generated by the Baiting Orders to sell. Immediately after executing the Executing Purchases to buy in the Limit Order Book, the spoofer cancels the Baiting Orders to sell or otherwise removes the supply of shares represented by the Baiting Orders to sell, completing the spoofing cycle.

31. A spoofing scheme, whether to drive the price upward⁷ or downward, is frequently used multiple times during a trading day and repeated throughout a protracted trading period. While each spoofing event may have a limited impact on the market, the cumulative and sustained effect of spoofing that occurs over a prolonged period can have a sustained negative impact on the price of the targeted security.

⁷ If, unlike here, the spoofer's goal is to drive the price up, the spoofer will enter in the Limit Order Book Baiting Orders to buy which are intended to "trick" or "bait" investors into placing their own orders to buy. The spoofer will place orders to sell to take advantage of an artificially manipulated upward market.

V. DEFENDANTS' UNLAWFUL SPOOFING SCHEMES

A. Each Defendant Has Participated in Spoofing Schemes

32. It is difficult to identify manipulative schemes in listed securities like Mullen on the basis of publicly available data because (i) those who participate in market manipulation schemes often employ a variety of tactics to hide their unlawful conduct, and (ii) most order flow in listed securities is publicly available only in anonymized form.

33. However, under Nasdaq rules, registered Nasdaq market makers must post deanonymized buy and sell orders (the “Two-Sided Obligation”) that identifies them as the registered market maker behind the orders. Each of the Known Defendants⁸ were Nasdaq-registered market makers during the Relevant Period. The Two-Sided Obligation applicable to the Known Defendants mandates that each “be willing to buy and sell such security for its own account on a continuous basis during regular market hours.”⁹ Moreover, every broker-dealer—including the Known Defendants—is required under Nasdaq rules to “engage in a course of dealings for its own account to assist in the maintenance, insofar as reasonably practicable, of fair and orderly markets.”¹⁰

34. On information and belief based on the methodology described in Paragraphs 38 through 45 below (the “Methodology”), Defendants’ market activity in Mullen shares was not limited solely to deanonymized orders placed pursuant to their Nasdaq Two-Sided Obligations.

⁸ For the avoidance of doubt, whenever reference is made to a Known Defendant’s participation in spoofing schemes, Plaintiffs’ allegations encompass the Known Defendant and its predecessors and/or affiliated entities (unless otherwise indicated).

⁹ Nasdaq Rulebook, Nasdaq Equity 2 Section 5, <https://listingcenter.nasdaq.com/rulebook/nasdaq/rules/Nasdaq%20Equity%202>.

¹⁰ *Id.*

Records produced by the Depository Trust and Clearing Corporation (the “DTCC”) indicate that Defendants often transacted far more Mullen shares than were evidenced by their deanonymized orders alone.¹¹ For example, on the settlement date of July 14, 2023, reflecting transactions executed on July 12, 2023, DTCC daily position reports show Clear Street LLC’s DTCC closing balance increase from 22,016 the day before to 401,516 shares of MULN—an increase of 379,500 shares.¹² An increase in Clear Street LLC’s DTCC balance on the settlement date of July 14, 2023 indicates that Clear Street purchased shares of MULN stock on the transaction date of July 12, 2023.¹³

35. However, Nasdaq records indicate that none of the deanonymized orders placed pursuant to Clear Street’s Two-Sided Obligations were executed on the trading date of July 12,

¹¹ And indeed, Nasdaq registered market makers—including the Known Defendants—may place anonymized orders that do not disclose the identity of the market participant. *See, e.g.,* Aldrich, E. M., Grundfest, J., & Laughlin, G. (2017). *The Flash Crash: New Deconstruction. Available at SSRN 2721922.* (“In some cases, market makers meet this [Two-Sided] obligation by posting attributed stub quotes while quoting more aggressively with non-attributed orders. In addition, non-market makers utilize attributed messages to attract trading interest. . .”).

¹² Transfer agent records maintained by Mullen indicate that no new shares were issued that day, and consistent with those records, the total of DTCC daily position report account changes that day is zero. The absence of new shares “entering the system” leads to the conclusion that transfers between DTCC members reflected purchases and sales—increases in DTCC account balances reflect purchases (net of sales) and decreases in DTCC account balances reflect sales (net of purchases).

¹³ A DTCC custodial transfer does not *always* evidence a purchase transaction on the open market by the DTCC member, because custodial transfers could occur for other reasons, such as when a broker-dealer takes custody of shares purchased by another broker-dealer or borrows shares in preparation for a short sale. However, those custodial transfers still reflect transactions—purchasing shares through another broker-dealer is still a purchase, and borrowing shares in anticipation of a short sale generally only occurs when a short sale transaction is to happen that same day. In any event, the DTCC daily position reports provide Plaintiffs with a reasonable basis to infer that for each day for which the reports demonstrate a change in a Known Defendant’s position, that Known Defendant executed transactions in shares of MULN stock on that day.

2023, corresponding to the settlement date of July 14, 2023. Similar conclusions arise on other dates. DTCC records show Clear Street selling, on net, 230,000 shares on the settlement date of July 17, 2023, corresponding to the trading date of July 13, 2023—yet Clear Street executed no deanonymized orders pursuant to Two-Sided Obligations that day. Indeed, over a sample of dates during the Relevant Period, DTCC records indicate substantial transactional activity by Clear Street—with over 73% of dates in that sample having a balance change from the day before—but no execution of deanonymized orders placed pursuant to Two-Sided Obligations.

36. In contrast to Clear Street, UBS did execute deanonymized orders placed pursuant to Two-Sided Obligations. However, the volume of UBS’s executed deanonymized orders is far less than the volume of transactions indicated by the DTCC data. For example, on July 6, 2023, UBS executed orders for 30,135 shares of Mullen shares in deanonymized orders. Yet according to DTCC records, UBS increased its holdings of Mullen shares, on net, by 1,807,374 shares on the settlement date of July 10, 2023, corresponding to the trading date of July 6, 2023. Thus, even when the volume of a Defendant’s executed deanonymized orders was nonzero, that volume was still only a small fraction of that Defendant’s overall transactional activity in Mullen shares.¹⁴

37. Because these DTCC records indicate transactional activity by Clear Street and UBS far in excess of their executed deanonymized orders—and in light of the fact that the Known Defendants are required, as Nasdaq market makers, to “engage in a course of dealings for its own account” *on Nasdaq*—it is not plausible that the volume of Defendants’ transactional activity in Mullen shares is limited to the deanonymized orders placed pursuant to their Two-Sided

¹⁴ Defendant IMC does not maintain an independent clearing account with DTCC, but Plaintiffs have no reason to conclude that these conclusions would differ for Defendant IMC.

Obligations.¹⁵ For this reason, Plaintiffs employed the Methodology as set forth herein after to attribute anonymized order flow to Defendants and thus identify their participation in spoofing schemes.

¹⁵ After Plaintiffs filed the original Complaint in this matter, Clear Street Markets and IMC wrote to Plaintiff, claiming that they did not trade *any shares* of MULN on a large number of dates listed in the original Complaint. IMC’s counsel went further and, during a meet-and-confer, represented that IMC did not even place a single order for Mullen shares on the days on which spoofing was alleged in the original Complaint. For several reasons, Plaintiffs do not find these representations credible.

First, these “no-trading” representations by Clear Street Markets and IMC are inconsistent with their obligations under Nasdaq rules to “engage in a course of dealings for its own account to assist in the maintenance, insofar as reasonably practicable, of fair and orderly markets.”

Second, Clear Street Markets’ claim that Clear Street did not transact in Mullen shares on any of the “Pricing Dates,” *see infra*, ¶¶ 93, 174, is contradicted by data obtained from the DTCC. As discussed above, *see supra*, ¶ 34 fn.13, a purchase of Mullen shares would not *necessarily* lead to a change in Clear Street LLC’s DTCC balance, *i.e.*, if purchases and sales offset each other. However, the DTCC data indicates that Clear Street, its subsidiaries, corporate parents, corporate siblings or affiliates or its customers purchased Mullen shares on the days identified in this First Amended Complaint through its own account and/or through third parties that ultimately culminated in clearing transfers to Clear Street. For example, DTCC records for settlement date March 18, 2022, reflecting purchases and sales executed on March 16, 2022, show a net increase of 916,264 shares in Clear Street LLC’s closing balance, from a closing balance of 31,835 shares on the settlement date of March 17, 2022 to a closing balance of 948,099 shares on the settlement date of March 18, 2022. The date for which the DTCC position reports strongly suggest net purchases by Clear Street—March 16, 2022—was a Pricing Date for sales of shares by Mullen. Similarly, IMC cleared through Goldman Sachs. While other parties also cleared through Goldman Sachs, DTCC records for settlement date March 14, 2023—reflecting purchases and sales executed on March 10, 2023—show a net increase of 825,944 shares in Goldman Sachs’s closing balance, from a closing balance of 24,432,488 shares on the settlement date of March 13, 2023 to a closing balance of 25,258,432 shares on the settlement date of March 14, 2023. The date for which DTCC position reports indicate net purchases by Goldman Sachs—March 10, 2023—was a Pricing Date for sales of shares by Mullen.

Third, Clear Street Markets’ representations concerning its order activity were inconsistent with Nasdaq data. For example, Clear Street Markets claimed that on October 25, 2022, it “maintained a single order to buy 100 shares of MULN and a single order to sell 100 shares of MULN at all times for the entire trading day on October 25, 2022.” However, on October 25, 2022, Clear Street Markets placed over sixty distinct new attributed orders which did not replace prior orders (message “F” in the publicly available Nasdaq TotalView ITCH historical data (the “ITCH” data)) at prices ranging from \$0.42 to \$0.7865. In addition, on that day, Clear Street

38. The Methodology imputes deanonymized activity to anonymized activity through the use of probabilistic imputation. Probabilistic imputation—broadly defined as making plausible inferences concerning information that is unavailable from information that is available—is a well-established method in the peer-reviewed literature¹⁶ and multiple courts in this district have denied motions to dismiss spoofing claims based on a plaintiff’s use of an imputation methodology to infer the identities of the parties behind anonymized trading activity. In one recent case, the court

Markets placed over 48,000 new orders which *replaced* prior attributed orders (ITCH message “U”). The aggregate share volume in these cancel-replace messages totaled over 4.9 million shares.

Fourth, IMC’s counsel’s representation during a meet-and-confer that IMC did not place any orders for Mullen shares on the Pricing Dates in the Complaint is flatly contradicted by the ITCH data.

Finally, neither IMC nor Clear Street Markets provided Mullen with verified records of their own order and trading activity as submitted to the Consolidated Audit Trail pursuant to their regulatory obligations. As “evidence” of its own activity, Clear Street Markets provided a partially redacted screenshot of two Excel sheets showing four rows of data on two days and publicly available ITCH data already in Mullen’s possession. And IMC provided only the same publicly available Nasdaq ITCH data already in Mullen’s possession. In conducting a reasonable inquiry into the factual basis of these allegations, Plaintiffs are not required to accept Clear Street Markets’ and IMC’s self-serving, unverified representations that are inconsistent with their legal obligations and the data Plaintiffs obtained from third-parties.

¹⁶ See, e.g., Paul Kofman & Ian Sharpe, *Using Multiple Imputation in the Analysis of Incomplete Observations in Finance*, 1 J. FIN. ECON. 216 (2003) (“imputation methods outperform the ad hoc approaches commonly used in the finance literature”); Frank X. Zhang, John R.M. Hand & Jeremiah Green, *The Characteristics that Provide Independent Information About Average U.S. Monthly Stock Returns*, 12 REV. FIN. STUD. 4389, 4390 (2017) (“we retain all firm-month observations by setting missing characteristic values to the standardized mean of that month’s nonmissing values”); Nathaniel Light, Denys Maslov & Oleg Rytchkov, *Aggregation of Information About the Cross Section of Stock Returns: A Latent Variable Approach*, 30 REV. FIN. STUD. 1339 (2017) (“we assign each missing characteristic its average value across all firms for which the characteristic is available in the same period”); RODERICK LITTLE & DONALD RUBIN, STATISTICAL ANALYSIS WITH MISSING DATA 67 (3d. Ed, 2019) (discussing imputation methods); Ruoxuan Xiong & Markus Pelger, *Large Dimensional Latent Factor Modeling with Missing Observations and Applications to Causal Inference*, 233 J. ECONOMETRICS 271 (2023) (developing inferential theory for imputed values).

found that the complaint adequately pleaded manipulative conduct where the attribution of executing purchases was performed by “match[ing] anonymized transactions from FINRA to changes in displayed OTC Link quotes: if a transaction is followed by a change in a market participant's bid within five seconds that is equal in volume and price to that of the transaction, the Executing Purchase [was] attributed to that market participant.”¹⁷ The possibility of error did not result in dismissal of the claims based on imputation; rather, the court held that the complaint adequately and plausibly imputed Executing Purchases based on a five-second window of time.

39. Here, Plaintiffs’ claims are based on a far more conservative methodology than the five-second imputation window which was found adequate to survive a motion to dismiss in *NWBO*. Instead of five seconds, Plaintiffs attributed orders sent by a Nasdaq market maker only if they were placed within the same nanosecond or millisecond of each other. This highly plausible inference is based on, among other things, the properties of the technology through which order messages are sent to exchanges in computerized “packets” of data,¹⁸ meaning that a single market participant’s close-in-time orders are likely to be a part of the same data envelope—with the result being that a market participant’s close-in-time orders are submitted at almost the same time to the exchange.

40. The closer the temporal proximity between any two given order messages, the more likely the same party sent both orders. Indeed, for orders arriving in the same nanosecond, it is

¹⁷ *Nw. Biotherapeutics, Inc. v. Canaccord Genuity LLC*, No. 1:22-CV-10185-GHW-GS, 2023 WL 9102400, at *16 (S.D.N.Y. Dec. 29, 2023) (“*NWBO*”), *report and recommendation adopted sub nom. Nw. Biotherapeutics, Inc. v. Canaccord Genuity LLC*, No. 1:22-CV-10185-GHW-GS, 2024 WL 620648 (S.D.N.Y. Feb. 14, 2024).

¹⁸ *See, e.g.*, <https://www.nasdaqtrader.com/content/technicalsupport/specifications/dataproducts/moldudp.pdf> ; <https://www.nasdaq.com/docs/SoupBinTCP%204.0.pdf> (describing TCP/IP and UDP packets for sending Nasdaq order messages).

virtually impossible to originate from different sources.¹⁹ Because there are one billion nanoseconds in a single second, if two messages were sent independently at the same *second*, the probability that they arrived in the same *nanosecond* by random chance alone is 1 in 1,000,000,000. And the probability that they arrive at a *specific* nanosecond by random chance alone is 1 in 1,000,000,000 multiplied by 1 in 1,000,000,000, or 1 in 1,000,000,000,000,000,000. Plaintiffs accordingly imputed all deanonymized and anonymized orders arriving within the same nanosecond to the same source.

41. The imputation of orders arriving within the same nanosecond to the same source serves as the basis of a material portion of Plaintiffs' claims. Indeed, there is at least one order whose market participant identifier was imputed by nanosecond match on 99.6% of the days in the Relevant Period. Moreover, the median (average) day in the Relevant Period had 1,994 (2,174) orders whose market participant identifiers were imputed by nanosecond match.

42. The same logic applies to orders arriving within the same millisecond, albeit with somewhat lower certainty. Even though a millisecond is longer than a nanosecond, very few market participants can engage with financial markets with such time precision. If two messages were sent independently and arrive at the exchange at the same *second*, the probability that they arrived in the same millisecond by random chance alone is 1 in 1,000. And the probability that they arrive at a *specific* millisecond by random chance alone is 1 in 1,000 multiplied by 1 in 1,000 or 1 in 1,000,000. This probability indicates that if order messages within the second are random,

¹⁹ Light travels approximately 1 foot per nanosecond, and while there are various reasons why signals on fiber optic cables may be delayed, it is highly likely that systems emitting optical signals at a physical distance from each other will arrive at different nanoseconds.

it is unlikely that co-occurrence in the same millisecond for a security like Mullen shares occurred by random chance, rendering millisecond imputation reasonable.²⁰

43. For orders arriving within the same millisecond—in contrast with those arriving within the same nanosecond—Plaintiffs added an additional requirement to make it less likely that orders are mistakenly attributed to other market participants. Because Defendants are Nasdaq-registered market makers, they are likely to place orders on both sides of the Limit Order Book. This is because market makers seek to maintain a flat inventory position—or purchases and sales of stock in roughly comparable amounts—to provide liquidity to customers or other broker-dealers and to avoid placing a directional bet on the stock price.²¹ Thus, to reduce the likelihood that imputation mistakenly attributed Defendants' orders to other market participants who were not market makers, Plaintiffs limited millisecond imputation to milliseconds where orders were placed on opposite sides of the Limit Order Book. That is, if a deanonymized sell order was sent within the same millisecond as an anonymized buy order (or vice-versa), the market participant identifier for the former was imputed to the latter (or vice-versa).

²⁰ Indeed, a court in this District recently acknowledged in a spoofing case that orders which arrive within the same millisecond may have come from the same party or parties that are closely coordinating. *See Harrington v. CIBC*, No. 21 Civ. 761 (S.D.N.Y. Mar. 18, 2024) (Doc. No. 207) (order granting in part motion for a protective order) (compelling disclosure of identities of third parties who placed orders in the same millisecond as spoofing Defendant).

²¹ In UBS's own words, "If the Commission wishes to distinguish between legitimate market-making transactions and other transactions that are for proprietary, speculative purposes, one way may be to look at how the broker-dealer in fact behaves. A market-maker, as is well known, tends to stay "flat" whenever possible because it makes its money by profiting from spreads, not from taking a directionally biased position at market risk." Comment Letter re: Proposed Regulation SHO; File No. S7-23-03 by J.P. Morgan Securities Inc. and UBS Securities LLC (Jan. 30, 2004), available at <https://www.sec.gov/rules/proposed/s72303/jpmorgan013004.htm>. (last visited March 16, 2024).

44. Out of an abundance of caution—in order to provide additional verification that the Methodology is unlikely to impute anonymized market activity to the wrong source—Plaintiffs tested the reliability of the Methodology by applying it to an order flow that was entirely deanonymized to determine a baseline “certainty rate.” Among the deanonymized subset of new order messages during the Relevant Period, the median daily likelihood of any two deanonymized orders arriving in the same millisecond *but being from different sources* was only 10%, and the average daily likelihood was 14%. In other words, the median daily likelihood of any two deanonymized orders arriving in the same millisecond and being from the same source (confirming the Methodology’s reliability) was 90%, and the average daily likelihood was 86%.²² Plaintiffs have not identified any reason to doubt that—for orders that arrive in close proximity—anonymous orders are just as likely as deanonymized orders to come from the same source.²³ Thus, the high certainty rate among deanonymized orders indicates that the Methodology is reliably inferring the market participants behind anonymous orders. Indeed, with accuracy rates this high, *the likelihood that at least one of the imputations will be correct crosses the 99% (average) threshold with only three imputations.*²⁴

²² This “success rate” is derived under the conservative approach of removing multiple possible imputations within a single millisecond prior to determining the success rate. If those additional possible imputations were not removed, the success rate would be even higher.

²³ On the contrary, the fact that MULN stock is a relatively thinly traded security makes this inference even more plausible. In thinly traded securities like MULN, market structure frictions support the logic of probabilistically inferring that messages arriving close in time to one another came from the same market participant. There are likely fewer market participants sending messages in more thinly traded securities, therefore making order messages arriving at Nasdaq close together less common, and the propensity of multiple market participants messages arriving at Nasdaq at a similar time less likely.

²⁴ Define the error rate as 1 minus the most conservative measure of the success rate (86%). Assuming independence, repetitively carrying out this exercise indicates the joint likelihood that

45. Thus, the assignment of Baiting Orders and Executing Purchases to a Defendant in this Amended Complaint is based on *either* fully deanonymized orders *or* an imputation of an anonymized order (message type “A”) to a Defendant firm—a Nasdaq market maker sending a deanonymized order (message type “F”). Because a large number of order events on Nasdaq consist of “cancel and replace” messages—in which the sender cancels one order and simultaneously places a new order—it is common on Nasdaq for a single party to repeatedly “cancel and replace” an initial order throughout a trading day. The Methodology imputes the firm identifier from deanonymized orders to anonymized orders arriving within the same nanosecond or millisecond (again, based on the expectation that anonymized and deanonymized orders are sent by the same market participant at the same time), including cancel-replace messages throughout the trading day which indicate a new order was replacing an old one. Moreover, to ensure that the same order was not included more than once, the Methodology took the added precautionary step of removing duplicates that arose during the imputation process even though doing so could remove accurate imputations and result in spoofers evading liability for their participation in spoofing schemes.

46. Further, throughout this Amended Complaint—unless otherwise indicated—where any reference is made to trades executed or orders placed, modified, or canceled by a Defendant, or otherwise to a Defendant’s market or trading activity, such reference includes all trades executed and orders placed, modified or canceled by that Defendant, regardless of whether the Defendant executed the trade(s) or placed, modified, or canceled the order(s) for their own proprietary or principal accounts, or did so on behalf of customers or clients. Such reference also includes trades

all imputations are incorrect. Thus, for two imputations, the likelihood both are incorrect is $(1-0.86)^2 = 1.96\%$. With three events, the probability all three are incorrect is $(1-0.86)^3 = 0.2744\%$

executed and orders placed, modified or canceled by a third party acting on behalf of or at the instruction of the Defendant (or Defendant's customers or clients) or for the benefit of the Defendant (or Defendant's customers or clients), including through clearing transfers to the Defendant, as well as any action taken by a corporate parent, subsidiary, sibling, affiliate, collaborator or co-conspirator of the Defendant.

47. For the avoidance of doubt, an allegation that a Defendant performed a series of actions includes scenarios where a Defendant performed one action in that series while a third party performed another action in that series for the benefit of that Defendant (or that Defendant's customers or clients). For example, a Defendant may have placed Baiting Orders through a third party (on behalf of itself or its customers or clients) who executed Executing Purchases and subsequently delivered those shares to the Defendant (for its own benefit or the benefit of its customers or clients) in a clearing and settlement transfer. Moreover, an allegation that a Defendant engaged in activity with scienter includes intentional activity as well as recklessly ignoring any of the foregoing type of conduct.

48. The Methodology makes possible the detection of the wide variety of means by which Defendants may engage in spoofing activity, including through third parties. Plaintiffs conducted an analysis of market activity—including deanonymized order flow and the anonymized order flow that was imputed to market participants through use of the Methodology—in order to identify apparent manipulation of the share price of MULN stock (the “Manipulation Analysis”).²⁵

²⁵ While discovery of complete, deanonymized order flow—from Defendants, FINRA, and other nonparties—may identify additional parties who engaged in spoofing activity, the Manipulation Analysis does not characterize ordinary market-making activity as manipulation. According to Plaintiffs' calculations, the Known Defendants identified by the Manipulation Analysis are only

49. The Manipulation Analysis turns on a *systematic* sequence of order activity. The systematic synchronization of order activity between a Defendant and a third party at the nanosecond- or millisecond-level is *extremely* unlikely to occur by random chance alone.²⁶ For this reason, when a third-party anonymized order arrives within the same nanosecond or millisecond as a Known Defendant's deanonymized order—and that occurs with sufficient frequency for the Manipulation Analysis to conclude that spoofing occurred—the near-impossibility of this occurring by random chance alone also indicates that the third party is acting on behalf of or at the instruction of the Known Defendant (or the Known Defendant's customers or clients) or for the benefit of the Known Defendant (or the Known Defendant's customers or clients). Indeed, a court in this District recently acknowledged in a spoofing case that orders which arrive within the same millisecond may have come from the same party or parties that are closely coordinating.²⁷

50. The spoofing activity in which Defendants engaged is not limited to situations in which the *same* customer, client or other beneficiary of the Defendant placed Baiting Orders and Executing Purchases. Rather, a Defendant may engage in spoofing activity by placing Baiting Orders to sell in order to lower the price at which a customer, client or other beneficiary of the Defendant purchases the shares of Mullen. As broker-dealers offering order execution services to clients, customers or other beneficiaries, the Known Defendants benefit, in the form of fees,

three (3) of thirty-nine (39) Nasdaq-registered market makers who submitted deanonymized orders in Mullen shares during the Relevant Period.

²⁶ As previously noted, the probability that just *three* imputations are incorrect is 0.2744%. As the number of imputations increases, the likelihood that all of the imputations are incorrect approaches zero. This holds even for accuracy rates substantially below 86%.

²⁷ *Harrington v. CIBC*, No. 21 Civ. 761 (S.D.N.Y. Mar. 18, 2024) (Doc. No. 207) (order granting in part motion for a protective order) (compelling disclosure of identities of third parties who placed orders in the same millisecond as spoofing Defendant).

commissions and other transactional revenue, from offering better execution prices to those clients, customers or other beneficiaries than their competitors. Because the Known Defendants are *also* NASDAQ-registered market makers, the Known Defendants have a powerful incentive to place Baiting Orders in their capacity as a NASDAQ-registered market maker in order to artificially drive down the price at which their customers purchase shares of Mullen.

51. Discovery of complete, deanonymized order flow—from Defendants, FINRA, and other nonparties—is expected to provided confirmation that Defendants engaged in the spoofing alleged herein. As of the filing of this Amended Complaint, however, Plaintiffs assert these claims on information and belief on the basis of the Methodology—an approach that yields conclusions more consistent with third-party data provided by DTCC than relying solely on deanonymized Nasdaq orders. Again, the Methodology utilized by Plaintiffs is more conservative (and more likely to be accurate) than the similar approach used to identify activity among anonymized orders in *NWBO*—an approach which a Court in this district held yielded inferences plausible enough to survive a motion to dismiss.²⁸

B. The Nature, Effect and Mechanism of Defendants’ Unlawful Schemes²⁹

52. Plaintiffs’ Manipulation Analysis demonstrated that Defendants participated in spoofing schemes either by placing orders and/or executing trades for their own proprietary or principal accounts, or doing so on behalf of customers or clients while failing to design, implement, and/or enforce a system of risk management and supervisory controls, policies, and procedures that ensured that their customers were not engaging in unlawful spoofing.

²⁸ *NWBO*, 2023 WL 9102400, at *16.

²⁹ Unless otherwise indicated, all allegations in this First Amended Complaint regarding the Known Defendants’ participation in spoofing schemes is on information and belief based upon the Methodology and the Manipulation Analysis.

Defendants' participation in those spoofing schemes consisted of (i) disseminating false and misleading information regarding the supply or demand of Mullen shares into the marketplace in the form of Baiting Orders that had no legitimate financial purpose and were never intended to be executed and (ii) executing transactions at the artificial price that resulted from the dissemination of false and misleading information.

53. During the Relevant Period, Defendants placed thousands of Baiting Orders that were intended to create the false impression that Mullen shares were declining in value based on the natural forces of supply and demand.

54. Defendants' spoofing schemes were accomplished as follows:

- a) Pursuant to the instructions of either their customers' or their own proprietary traders, Defendants flooded the Limit Order Book of Nasdaq with large quantities of Baiting Orders to sell, which moved the market price of Mullen securities downwards. The sole purpose for the placement of these Baiting Orders to sell was to deceive and mislead other market participants into believing that the market price of Mullen securities was moving downward due not to manipulation, but the natural forces of supply and demand;
- b) Almost simultaneously, when the Baiting Orders were being placed in the Limit Order Book, Defendants also placed their Executing Purchases on the opposite side of the Limit Order Book to purchase Mullen shares at the lower stock prices resulting from the downward manipulation of their Baiting Orders to sell; and

- c) Shortly after the completion of their Executing Purchases to buy Mullen shares at the lower prices, Defendants cancelled their Baiting Orders to sell from the Limit Order Book.³⁰

55. The above description of the three stages of Defendants’ spoofing cycles—which collectively make up a “Spoofing Episode”—only represent one permutation of the manner through which the Known Defendants and John Does participated in spoofing schemes. Yet just as a spoofer can manipulate the price of a security by creating an order and later cancelling the same order, spoofing can be accomplished in other ways—for example, by adding shares to an existing sell order and then removing that same volume from a different sell order after the Executing Purchase, or by creating one sell order and cancelling another that had been placed earlier. That is, the unlawful spoofing upon which Plaintiffs’ claims are based extends beyond a pattern in which (i) Order X was placed for Y shares, (ii) an executing purchase was made, and

³⁰ The terms “cancel” or “cancellation” in this First Amended Complaint refer to either (i) the deletion of an order from a Limit Order Book, (ii) the modification of an order on a Limit Order Book which results in reduction in the volume of shares displayed in that order, or (iii) any other action that removed the supply of shares represented by the Baiting Orders to sell (however briefly). Deletions of orders and modifications of orders to sell to reduce their volumes are economically indistinct. A “cancel-replace” message (ITCH message type “U”) which indicates that one order by a market participant is cancelled and replaced with a new order by that same market participant is treated as such, *i.e.*, as a cancellation of the original order and placement of a new order. As a form of order cancellation, cancel-replace messages can function to effectuate spoofing schemes by repricing orders to prevent them from executing. *See, e.g., CFTC v. Nav Sarao Futures Ltd. PLC*, No. 15-CV-3398, 2016 WL 8257513, at *6 (N.D. Ill. Nov. 14, 2016) (spoofer “automatically and simultaneously modified the large layered sell orders at the various price levels, resulting in Defendants’ orders generally remaining at least three or four ticks from the best asking price in the order book.”); Complaint, *CFTC v. Mohan*, No. 4:18-cv-00260, at *15 (S.D.Tx. Jan. 18, 2018) (spoofing defendant maintained “Smart Stuffing book. (order cancel replace)”; (ordering that a spoofing defendant continue to use a “Delayed Replace for Cancel/Replace Tool” which implements a “speed bump” to “increase the time between cancellation and replacement”). Each Defendant’s cancellation (including cancel-replace) activity was asymmetrically skewed toward the sell side, reflecting intent to place Baiting Orders to sell to drive down the price of Mullen shares. *See infra*, ¶¶ 64, 67-70.

(iii) Order X for Y shares was thereafter cancelled. The Manipulation Analysis detects a wide variety of forms of spoofing, regardless of the exact sequence of order flow that they may take. All of these forms of spoofing send an artificial supply signal inducing other market participants to sell shares of Mullen and thereby drive down the price of Mullen shares.

56. The three stages of Defendants’ Spoofing Episodes were completed sometimes within nano- or milliseconds and were repeated multiple times a day and continuously throughout the Relevant Period.

57. The continuous placement and cancellation (or otherwise removal of the supply of shares represented by the Baiting Orders to sell, however briefly) of collectively tens of millions of Baiting Orders to sell by the Known Defendants was not in furtherance of any legitimate purpose. Rather, this activity sent a false and misleading pricing signal to the market in order to “trick or bait” market participants into executing their own sell orders. Such activity operated as a fraud on the market and created a “pile-on” effect which drove down Mullen’s share price even further, thereby enabling Defendants to purchase Mullen’s shares at artificially manipulated lower prices—and resulted in Mullen selling or issuing its shares at artificially low prices, to Mullen’s detriment.

C. The Specifics of Defendants’ Unlawful Manipulation of Mullen’s Share Price

58. Defendants submitted fictitious Baiting Orders totaling at least 470,931,814 shares on Nasdaq during the Relevant Period. Defendants’ Baiting Orders led to substantial sell-side imbalances in Defendants’ order flow, which were intended to and did send false and misleading pricing signals to the marketplace that interfered with Mullen’s share price being determined by the natural forces of supply and demand.

59. Defendants' Baiting Orders (as alleged herein) created artificial selling pressure which led to a "pile-on" effect in which other market participants were induced to submit additional sell orders, and thus, artificially drove down the price of Mullen shares.

60. Over the course of each Spoofing Episode, the Baiting Orders placed by the Known Defendants successfully induced the entry of sell orders from other market participants, driving down the price of Mullen shares by an average of 1.09% per episode.

61. Almost simultaneously, the Known Defendants executed Executing Purchases to purchase a total of 2,777,294 shares at these depressed prices below the prevailing best offer prior to entry of the Baiting Orders.

62. A complete list of Spoofing Episodes by each Known Defendant is attached as Exhibit 1.

63. Shortly thereafter, the Known Defendants cancelled all of the Baiting Orders.

64. The Known Defendants' Baiting Orders were intended to function as part of a scheme to defraud the market in Mullen securities rather than be executed. The intent and function of the Known Defendants' Baiting Orders may be inferred based on (1) the short time period between the continuous and repeated placement and cancellation of the Baiting Orders; (2) the concentration of cancelled Baiting Orders during the limited period when each spoofing event occurred; (3) the average size of the Baiting Orders that were cancelled, in comparison to the average size of the bona-fide sell orders that were executed; (4) the ratio of cancelled Baiting Orders to sell compared to the executed bona-fide orders to buy that existed; and (5) the reoccurrence of the same trading patterns.

65. The below table lists for each Known Defendant the following: (i) the number of Executing Purchases; (ii) the share volume of Baiting Orders which were subsequently

cancelled; (iii) the share volume of Executing Purchases which were executed at depressed prices; and (iv) the average price decline in Mullen shares that resulted from that Known Defendant's Spoofing Episodes over the course of the Relevant Period. Again, upon information and belief, the data contained in this table does not reflect all of the Spoofing Episodes that were utilized to manipulate the price of MULN stock during the Relevant Period. Only after complete and full party and nonparty discovery can Plaintiffs conduct a full and complete analysis of market activity to determine the extent to which the Known Defendants and John Does unlawfully manipulated Mullen's share price.

Defendant	No. of Purchases	Shares in Baiting Orders	Purchase Volume	Ratio of Baiting Orders to Purchase Volume	Average Price Decline
IMC	291	255,095	65,400	3.9005-to-1	-1.5341%
Clear Street	2,496	39,642,045	2,022,273	19.6027-to-1	-0.9124%
UBS	476	431,034,674	689,621	625.0312-to-1	-1.7644%

D. Defendants Acted with Scienter

66. The Manipulation Analysis indicates that each Known Defendant knowingly or recklessly participated in spoofing schemes that were intended to—and in fact did—deceive, manipulate or defraud the market for Mullen shares and participants in that market.

67. An ordinary trader buys a security when he or she believes that the price of the security is likely to go higher and sells when he or she believes the price of the security will go lower. In contrast, one of the tell-tale signs of manipulative spoofing is rapid, unnatural reversal of trading direction—a large volume of sell orders, followed by buy orders, followed by the cancellation of sell orders—which suggests that the original sell orders were merely a ploy to drive the price down to “buy low.” The Known Defendants exhibited this distinctive pattern

again and again—and at multiples of the average trader, demonstrating that the Known Defendants’ manipulative trading was intentional.

68. In the trading activity connected to the Spoofing Episodes—during the two-minute period preceding the execution of Executing Purchases (the “Baiting Periods”)³¹—the Known Defendants submitted a median of 7,200 shares in new sell-side orders per Executing Purchase. During the same time window as the Baiting Period prior to purchases of Mullen shares that were not parts of Spoofing Episodes, market participants submitted a median of 500 shares in new sell-side orders per purchase. The ratio of 7,200-to-500 shows that the share volume of new sell-side order activity prior to Executing Purchases in Spoofing Episodes exceeded the share volume of sell-side order activity prior to purchases not in Spoofing Episodes. The following table presents these data by the Known Defendant, which shows that this pattern holds for IMC and UBS:³²

³¹ This two-minute window was used for the purposes of the analysis underlying the allegations of this First Amended Complaint. The use of this two-minute window is not meant to imply that orders placed further in advance of Executing Purchases are not relevant to assessing Defendants’ trading patterns or intent to manipulate, nor does the two-minute window imply that orders were necessarily placed or cancelled at the beginning or end of the window.

³² Clear Street placed fewer new sell-side orders just *before* individual Spoofing Episodes but as shown in the next table, cancelled far more orders *after* Spoofing Episodes, indicating that Clear Street effected its spoofing scheme by placing certain sell-side orders more slowly, *i.e.*, before the two-minute window, and cancelling more orders *en masse* just *after* Executing Purchases.

Defendant	Median Share Volume of New Sell-Side Orders During the Baiting Periods	
	Executing Purchases Within Spoofing Episodes	Executing Purchases Outside Spoofing Episodes
IMC	600	400
UBS	225,123	20,520
Clear Street	7,141	8,800

69. During the period of time in which the Baiting Orders were cancelled following the Executing Purchases at the center of each Spoofing Episode (the “Cancellation Period”), the Known Defendants cancelled a median of 11,800 shares in sell-side orders, or 163.89% of the created volume of 7,200 sell-side shares. During the same time window as the Cancellation Period following non-spoofed executed purchases, market participants cancelled a median of 100 shares in sell-side orders, or 20% of the created volume of 500 sell-side shares. The difference of 163.89% vs. 20% shows that the share volume of cancelled sell-side order activity following Executing Purchases in Spoofing Episodes exceeded the share volume of cancelled sell-side order activity following purchases not in Spoofing Episodes. The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant³³:

³³ The cancelled sell-share volume for Clear Street is *higher* than the new sell-side order volume (11,409 vs. 7,141 shares) in Spoofing Episodes, but *lower* than the new sell-side order volume outside Spoofing Episodes (6,700 vs. 8,800 shares). That is, like the other two Known Defendants, Clear Street’s cancellation rate was far higher in Spoofing Episodes than in non-Spoofing Episodes—with the difference being that Clear Street effectuated its spoofing activity by cancelling additional sell-side orders it had previously placed on the order book.

Defendant	Median Share Volume of Cancelled Sell-Side Orders During the Cancellation Period	
	Executing Purchases Within Spoofing Episodes	Executing Purchases Outside Spoofing Episodes
IMC	600	100
UBS	452,048	19,997
Clear Street	11,409	6,700

70. On median, there were 1,340% more sell-side shares created in the Baiting Period prior to Executing Purchases compared to non-spoofed executed purchases, and 11,700% more sell-side shares cancelled in the Cancellation Period following Executing Purchases compared to non-spoofed executed purchases. Stated differently, the Known Defendants injected more artificial sell-side order flow than non-spoofed orders prior to buying shares, as measured by (1) the volume of sell side order flow (1,340% higher); (2) the cancellation of that order flow (11,700% higher); and (3) the greater share of cancelled sell-side order flow (164% vs. 20%).³⁴ The following table presents these data by Defendant, which shows that this pattern holds for each Defendant:

³⁴ Some of the cancelled orders identified by the Manipulation Analysis were created prior to the Baiting Periods. For this reason, the share of cancelled sell-side order flow indicated by the analysis may exceed 100% when additional orders that were not created within the Baiting Periods were nevertheless cancelled after Executing Purchases, thus indicating the manipulative intent behind the Baiting Orders.

	Cancellation Rate of New Sell-Side Orders From Baiting Period to Cancellation Period	
Defendant	Executing Purchases Within Spoofing Episodes	Executing Purchases Outside Spoofing Episodes
IMC	100%	25%
UBS	158%	110%
Clear Street	201%	97%

71. The spoofing patterns identified pursuant to the Manipulation Analysis give rise to a strong inference of scienter for the following reasons:

72. *First*, the Known Defendants submitted Baiting Orders for a median of 5,700 sell-side shares per Executing Purchase which were subsequently cancelled. By contrast, over those periods, other market participants submitted orders on median for only 18 sell-side shares which were subsequently cancelled—a difference of 32,458%. The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

	Median Baiting Orders, <i>i.e.</i>, Median Share Volume of New Sell-Side Orders Subsequently Cancelled		
Defendant	Surrounding Purchases Within Spoofing Episodes	Surrounding Purchases Outside Spoofing Episodes	Difference in %
IMC	400	36	1,011%
UBS	122,642	258	47,534%
Clear Street	5,800	7	82,856%

73. *Second*, the Known Defendants purchased far more shares at depressed prices during the minutes following the spoofing window. Specifically, the Known Defendants purchased a median of 2,100 shares while other market participants purchased a median of 13

shares over these same windows. The Manipulation Analysis's indication that the Known Defendants were far more likely to purchase Mullen shares after Spoofing Episodes indicates that the Known Defendants sought to exploit the artificial price decline induced by spoofing activity to purchase Mullen shares at artificially low prices before any partial reversion of the price back towards its pre-spoof level.³⁵ The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

	Median Purchase Share Volume After Executing Purchase		
Defendant	Defendants' Executing Purchase	Other Purchases Over Same Window	Difference in %
IMC	400	9	4,443%
UBS	4,100	44	9,317%
Clear Street	2,177	10	21,769%

74. *Third*, the size of executed sell-side orders compared to Executing Purchases by Defendants is indicative of scienter. Following the median Executing Purchase, the Known Defendants executed 200 buy-side shares in Executing Purchases while in contrast executing 0 shares in sell-side orders. The stark contrast between the share volume of Executing Purchases and sell-side orders further indicates that the Known Defendants were manipulating the market by using Baiting Orders as tools to generate artificial prices at which to place Executing Purchases at favorable prices while making sure not to sell shares of Mullen at these artificially

³⁵ These purchases do not inherently induce a price reversion because they are non-marketable limit orders that execute in response to an aggressively priced sell order by another market participant.

depressed prices—consistent with a manipulative scheme. The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

	Median Share Volume of Executed Purchases vs. Executed Sales After Purchases		
Defendant	Executed Purchases	Executed Sales After Purchases	Difference in %
IMC	100	0	Infinite
UBS	200	0	Infinite
Clear Street	200	0	Infinite

75. *Fourth*, the median size of the Baiting Orders that were cancelled—in comparison to the median size of the bona-fide purchases that were executed—is also indicative of scienter. Prior to and following each Executing Purchase, the Known Defendants placed and subsequently cancelled a median of 5,700 Baiting Orders, and in contrast executed only 200 purchases. The stark contrast between the number of Baiting Orders and the number of Executing Orders during spoofing activity indicates that the Known Defendants were manipulating the market by using Baiting Orders to sell as tools to generate artificial prices at which to place their Executing Orders at favorable prices—and not as genuine attempts to sell shares of MULN stock. The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

	Median Baiting Orders vs. Executed Purchase Share Volume		
Defendant	Baiting Orders	Executed Purchases	Difference in %
IMC	400	100	300%
UBS	122,642	200	61,319%
Clear Street	5,800	200	2,899%

76. *Fifth*, the Known Defendants' behavior was inconsistent with bona fide market making because over the Cancellation Periods, on average, the Known Defendants cancelled 88% of the sell-side orders created during Baiting Periods, but only 63% of the buy-side orders created during Baiting Periods. This asymmetry in order cancellation rates is inconsistent with bona fide market making, which involves purchases and sales in roughly comparable amounts to provide liquidity to customers or other broker-dealers.³⁶ The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

	Average Cancellation Ratios Among Spoofing Episodes		
Defendant	Sell-Side	Buy-Side	Difference in %
IMC	77%	39%	99%
UBS	90%	71%	26%
Clear Street	89%	64%	39%

77. *Sixth*, the Known Defendants' behavior was also inconsistent with bona fide market making because a market maker ordinarily seeks to maintain a flat inventory position—or

³⁶ See, e.g., 73 FR at 61699; 69 FR at 48015.

purchases and sales of stock in roughly comparable amounts—to provide liquidity to customers or other broker-dealers and to avoid placing a directional bet on the stock price. In UBS's own words:

If the Commission wishes to distinguish between legitimate market-making transactions and other transactions that are for proprietary, speculative purposes, **one way may be to look at how the broker-dealer in fact behaves.** A market-maker, as is well known, tends to stay "flat" whenever possible because it makes its money by profiting from spreads, not from taking a directionally biased position at market risk.³⁷

78. For this reason, following a purchase, market makers will more aggressively price sell-side orders to flatten their inventory position. Here, however, Defendants were less likely to aggressively price sell orders after Executing Purchases as compared to non-spoofed executing purchases. In percentage terms, after spoofed Executing Purchases, the Known Defendants' most aggressively priced sell-side orders were, on median, 89.58% as aggressive as the most aggressively priced sell orders on the Nasdaq order book, compared to 96% following non-spoofed purchases.³⁸ That relative passivity following spoofed Executing Purchases is consistent with Defendants' using sell-side orders to maintain downward pressure on the share price rather than seeking to aggressively flatten their inventory like a market maker would (and in fact was how the Known Defendants acted following non-spoofed purchases). The following table

³⁷ Comment Letter re: Proposed Regulation SHO; File No. S7-23-03 by J.P. Morgan Securities Inc. and UBS Securities LLC (Jan. 30, 2004), available at <https://www.sec.gov/rules/proposed/s72303/jpmorgan013004.htm>. (last visited March 16, 2024).

³⁸ This calculation divides the lowest price sell order on Nasdaq by the lowest price sell order by the Known Defendants. For example, if the lowest priced sell order on the Nasdaq was \$9 per share, and the lowest priced sell order by the Known Defendants was \$10 per share, the calculation is that the Known Defendants were \$9 (lowest price sell order on Nasdaq) / \$10 (lowest price sell order by Defendants) = 90% as aggressive as the most aggressively priced sell order on the Nasdaq.

presents these data by Known Defendant, which shows that this pattern holds for UBS and Clear Street.³⁹

	Aggressive Pricing of Sell-Side Orders vs. Nasdaq Order Book	
Defendant	Executing Purchases Within Spoofing Episodes	Executing Purchases Outside Spoofing Episodes
IMC	92%	92%
UBS	78%	99%
Clear Street	90%	95%

79. *Seventh*, each Defendant (and/or their customers) specifically designed and implemented algorithmic trading programs that routed orders, executed trades and otherwise carried out the spoofing schemes. Defendants' (and/or their customers') algorithms were programmed to—and did, during the Relevant Period—generate trading patterns that involved the placement and cancellation of tens of millions of Baiting Orders to sell that were never intended to be executed. Moreover, upon information and belief, Defendants—each of which is a sophisticated entity that uses cutting edge technology—closely monitored, modeled, and analyzed the performance, impact, and effects of their algorithmic trading program throughout the Relevant Period, including the spoofing pattern which the algorithm executed again and again on Mullen's stock during the Relevant Period with similar effects each time.

80. *Eighth*, upon information and belief, each Defendant's (and/or their customers') trading activities were approved by corporate officials sufficiently knowledgeable about the

³⁹ IMC had the same level of aggressiveness following Executing Purchases between Spoofing Episodes and non-Spoofing Episodes. However, the other indicia of intent detailed in this First Amended Complaint still yield the strong inference that IMC acted with scienter.

trading practices of each Defendant (and/or their customer) such that each Defendant (and/or their customer) knew or recklessly ignored that they were engaging in illegal spoofing.

81. *Ninth*, as registered broker-dealers, each of the Known Defendants—and each John Doe defendant that is a registered broker-dealer—knew and/or were required to know that it was unlawful to place Baiting Orders to sell that were never intended to be executed in order to trick market participants into selling shares.

82. *Tenth*, as discussed above, Defendants participated in spoofing schemes either by placing orders and/or executing trades for their own proprietary or principal accounts, or doing so on behalf of customers or clients. Either way, pursuant to applicable industry rules and regulations including SEC Rule 15c3-5 and FINRA Rule 3120, and their own compliance manuals, Defendants were “Gate Keepers” of the integrity of the marketplace. Defendants were required to have internal policies, procedures and systems that monitored, detected, and prevented their own and the manipulative or fraudulent trading devices or schemes of their customers. Defendants failed to adequately design compliance systems or maintain supervisory policies and procedures to prevent the Spoofing Episodes set forth in this First Amended Complaint. Given Defendants’ obligation to monitor, detect, and prevent manipulative or fraudulent trading and their FINRA Report 3130 in which they stated that they did, in fact, do so, Defendants either intentionally manipulated the market through their spoofing scheme, or recklessly ignored their own or their customers’ fraudulent trading.

83. *Eleventh*, the short time period between the placement and cancellation of Defendants’ Baiting Orders is further indicative of scienter. The Known Defendants placed and then cancelled the Baiting Orders within seconds and even milliseconds. The fastest time to cancellation among Spoofing Episodes by IMC, UBS and Clear Street was 0.000000822,

0.000062106 and 0.000001181 seconds, respectively. This practice—which occurred thousands of times over the Relevant Period—indicates that the Known Defendants never intended to execute the Baiting Orders.

84. *Twelfth*, the concentration of cancelled Baiting Orders during the limited period when each spoofing event occurred is also indicative of scienter. The Known Defendants cancelled all of the Baiting Orders—sometimes amounting to tens of thousands of Baiting Orders—in a matter of seconds and sometimes milliseconds, all of which had been placed by the Known Defendants mere seconds earlier.

85. *Thirteenth*, the size of the Baiting Orders that were cancelled—in comparison to the size of bona-fide sell-side orders that were executed by the Known Defendants—is also indicative of scienter. During each Spoofing Episode, the Known Defendants placed and subsequently cancelled a median of 5,700 shares in Baiting Orders while executing a median of zero sell-side orders. The stark contrast between the share volume of Baiting Orders and executed sell-side orders during each Spoofing Episode indicates that the Known Defendants were manipulating the market by using Baiting Orders as tools to generate artificial prices rather than making a genuine attempt to sell shares. The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

Defendant	Median Share Volume of Baiting Orders	Median Share Volume of Executing Sales
IMC	400	0
UBS	122,641	0
Clear Street	5,800	0

86. *Fourteenth*, the ratio of cancelled Baiting Orders compared to executed bona-fide orders to sell is thus also indicative of scienter. The Known Defendants placed and subsequently

cancelled 5,700 sell-side shares in Baiting Orders, while in contrast executing zero bona-fide sell-side orders. A sell-side cancellation rate of 100% versus an execution rate of 0% is a strong indication that the Known Defendants never intended to execute those Baiting Orders. This rate is the same for every Known Defendant.

87. *Fifteenth*, the size of executed sell-side orders compared to Executing Purchases by Defendants is also indicative of scienter. The Known Defendants executed 200 shares of Executing Purchases on median while in contrast executing zero sell-side orders on median. The stark contrast between the share volume of Executing Purchases and sell-side orders further indicates that the Known Defendants were manipulating the market by using Baiting Orders as tools to generate artificial prices at which to place Executing Purchases at favorable prices. The following table presents these data by Known Defendant, which shows that this pattern holds for each Known Defendant:

Defendant	Median Share Volume of Baiting Orders	Median Share Volume of Executing Purchases
IMC	400	100
UBS	122,641	200
Clear Street	5,800	200

88. *Sixteenth*, the Known Defendants carried out thousands of Spoofing Episodes over the Relevant Period, and often multiple episodes per trading day. The frequent repetition of this pattern of (i) placing fictitious Baiting Orders which created an artificial price, (ii) executing Executing Purchases at the artificial price; and then (iii) cancelling all of the Baiting Orders—is indicative of scienter.

89. When the above indicia of scienter are collectively considered, strong circumstantial evidence exists that each Known Defendant either knew or recklessly ignored that

their own conduct and/or their customers' conduct was designed to and did unlawfully manipulate the market in violation of the securities laws.

90. *Finally*, Defendants had a strong motive to spoof shares of MULN stock. By posting the fictitious Baiting Orders, Defendants were able to purchase millions of Mullen shares at depressed prices compared to purchasing shares of Mullen at the prevailing best offer. In some cases, as described below, the Known Defendants' Executing Purchases closed out a preexisting short position, yielding an immediate profit.⁴⁰ In other cases, Known Defendants converted these profits to cash by selling shares prior to the price decline or following a partial rebound.

91. While the profits from any single Spoofing Episode are small, the rapid placement and cancellation of these Baiting Orders by the Known Defendants shows how the accumulation of profits due to spoofing activity may be substantial, because rapid placement and cancellation allows the strategy to be repeated over and over and applied to numerous securities on an industry- or even market-wide basis. In *SEC v. Lek Securities*—a case which involved a common form of spoofing known as “layering”—the SEC wrote in its Complaint that “[a]lthough [the defendant’s] profit on any single instance of layering might have been small, when multiplied by the hundreds of thousands of instances of layering in which [the defendant]

⁴⁰ To conclude that an Executing Purchase closed out a preexisting short position, Plaintiffs identified short sales by Known Defendants immediately prior to the Executing Purchases. While short sales are not publicly disclosed in the Nasdaq ITCH data, Plaintiffs identified short sales by imputing Nasdaq short sale transactional data to executed sale transactions by each particular Known Defendant, matching on the hour-minute-second, price and volume of the sale transaction. The attribution of sale transactions to Known Defendants is based on the Methodology.

engaged, the profits totaled many millions of dollars.”⁴¹ The SEC further indicated that “[the defendant] engaged in hundreds of thousands of instances of layering *in numerous securities*,” and pointed to the use of algorithms in carrying out the spoofing scheme.⁴² Just like as the Known Defendants are believed to have done, the defendant in *Lek Securities* made very small amounts per trade—e.g., \$0.07 or \$0.10. But the aggregation of small profits from many trades in a repeated setting renders a spoofing scheme highly profitable—far more profitable than genuine trading that is exposed to market risk.

92. Defendants employed high-frequency algorithms that were active in a large number of securities. For example, Clear Street acted “as a market maker in more than 3,000 securities per day” and used “computerized trading algorithms to send orders and execute trades, sending an average of approximately ten million orders per day, excluding cancellations.”⁴³ UBS employs an algorithmic trading platform with a variety of algorithms and tactics that apply to a multitude of securities, including UBS Select, VWAP, DarkPost and SmartSeek.⁴⁴ And IMC represents that it develops “algorithms to trade in *all major asset classes* on more than 100

⁴¹ Compl. at ¶ 48, *SEC v. Lek Securities Corp.*, 1:17-cv-01789 (S.D.N.Y. Mar. 10, 2017) ECF No. 1.

⁴² *Id.* at *13.

⁴³ *The NASDAQ Stock Market LLC*, Letter of Acceptance, Waiver and Consent, No. 2012035187502, at ¶ 11, June 19, 2019 (https://www.nasdaqtrader.com/content/marketregulation/NASDAQ/DisciplinaryActions/WBPX_NQ_2019.pdf).

⁴⁴ UBS, Form ATS-N/UA (last accessed Mar. 15, 2024), https://www.sec.gov/Archives/edgar/data/230611/000183988223027790/xslATS-N_X01/primary_doc.xml.

trading venues around the world.”⁴⁵ For these reasons, Defendants’ profit motive was not limited to the gains from spoofing in a single security but reflects the expected profit to spoofing through an algorithm across the entire universe of securities in which that algorithm trades.

93. The following Sections describe selected examples of manipulative spoofing activity identified over the Relevant Period, based on the Manipulation Analysis. As used in the following sections, “Pricing Date” means a date on which Mullen sold or issued shares at a value derived from the closing price of MULN stock.

E. Illustrative Examples⁴⁶ of Defendants’ Participation in Spoofing Episodes

1. Clear Street

a) Example: March 8, 2023 - 15:31:14

94. On March 8, 2023 at 15:31:14.855865, Mullen calculated that the national best bid and offer for MULN was a bid to purchase 40 shares at a price of \$0.1892 per share and an offer to sell 153 shares at a price of \$0.1893 per share.

95. From 15:29:14.855865 to 15:31:14.855865, Clear Street placed 9,900 shares of Baiting Orders at prices ranging from \$0.2393 to \$0.1893 per share.⁴⁷ As of 15:31:14.855865

⁴⁵ IMC, *Leading in Global Marketing, Access Our Liquidity* (last accessed Mar. 15, 2024), <https://www.imc.com/us/>.

⁴⁶ The following examples are based on the Manipulation Analysis, and the Methodology upon which the analysis was based.

⁴⁷ The volume of Baiting Orders is the lesser of the volume of sell-side orders cancelled by the Defendant in the two minutes after the Executing Purchase and/or the volume of sell-side orders created by the Defendant in the two minutes prior to the Executing Purchase (*i.e.*, the sell-side orders cancelled by the Defendant within two minutes after the Executing Purchase whose aggregate volume was created by the Defendant within the two minutes prior to the Executing Purchase). The market impact of a Baiting Order is the same regardless of whether the Defendant who placed it cancelled that specific Baiting Order or an equivalent order placed by that Defendant on Nasdaq. For this reason, whenever prices for Baiting Orders are stated in this First Amended Complaint, those prices reflect the prices of orders cancelled after an Executing

the submission of these Baiting Orders left Clear Street with an imbalanced order book position favoring the sell side consisting of bids to purchase 51,200 shares at prices ranging from \$0.1392 per share to \$0.1892 per share, and an offer to sell 136,423 shares at prices ranging from \$0.1985 per share to \$100.00 per share.

96. Between 15:31:14.855865 and 15:33:14.855865, Clear Street did not sell any shares of MULN, consistent with the fictitious nature of the Baiting Orders.

97. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 15:31:14.855865 Clear Street took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 100 shares, at a price of \$0.1892 per share, which was below the prevailing best offer of \$0.1893 per share (the price that Clear Street would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

98. Not only did Clear Street purchase these shares at a price below the prevailing best offer at the time, but the Baiting Orders by Clear Street drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 15:29:14.855865, two minutes prior to the Executing Purchases, the share price of MULN stock was \$0.19 per share. The price of the Executing Purchases was \$0.1892 per share, a decline of -0.42%.

99. Clear Street began to cancel the artificial supply injected by these Baiting Orders within 3.338891 seconds. By 15:33:14.855865 Clear Street had cancelled the artificial supply injected by all of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by Clear Street.

Purchase. Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$0.2459 to \$0.1892 per share.

100. Clear Street had a motive to engage in spoofing in order to close a short position in the shares of MULN stock. Specifically, on March 8, 2023 at 14:38:17.737896982, Clear Street sold short 100 shares of MULN stock at a price of \$0.1953 per share, yielding a return of 3.224101% by the Executing Purchases at the artificially depressed price of \$0.1892 per share.

101. While the dollar profits on that single transaction were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through Clear Street's algorithms that operate in thousands of securities. On an annualized basis, the return on this Spoofing Episode is extremely significant. Achieving that return every day over one year would have multiplied Clear Street's capital invested in Spoofing Episodes *more than eight-fold* over the course of the year.

102. DTCC records for the settlement date of March 10, 2023, reflecting purchases and sales executed on March 8, 2023, show a net increase of 105,580 shares in Clear Street's closing balance, from a closing balance of 129,163 shares on the settlement date of March 9, 2023 to a closing balance of 234,743 shares on the settlement date of March 10, 2023. The date which DTCC data indicate net purchases by Clear Street, March 8, 2023, was a Pricing Date for sales of shares by Mullen.

b) Example: June 20, 2023 - 15:27:07

103. On June 20, 2023 at 15:27:07.622750, Mullen calculated that the national best bid and offer for MULN was a bid to purchase six shares at a price of \$0.1625 per share and an offer to sell 134 shares at a price of \$0.1626 per share.

104. From 15:25:07.622750 to 15:27:07.622750, Clear Street placed 4,400 shares of Baiting Orders at prices ranging from \$0.2141 to \$0.1629 per share.⁴⁸ As of 15:27:07.622750

⁴⁸ Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$0.2149 to \$0.1633 per share.

the submission of these Baiting Orders left Clear Street with an imbalanced order book position favoring the sell side consisting of bids to purchase 1,198 shares at prices ranging from \$0.1125 per share to \$0.1625 per share, and an offer to sell 5,858 shares at prices ranging from \$0.1704 per share to \$1.39 per share.

105. Between 15:27:07.622750 and 15:29:07.622750, Clear Street did not sell any shares of MULN, consistent with the fictitious nature of the Baiting Orders.

106. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 15:27:07.622750 Clear Street took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 698 shares, at a price of \$0.1625 per share, which was below the prevailing best offer of \$0.1626 per share (the price that Clear Street would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

107. Not only did Clear Street purchase these shares at a price below the prevailing best offer at the time, but the Baiting Orders by Clear Street drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 15:25:07.622750, two minutes prior to the Executing Purchases, the share price of MULN stock was \$0.1633 per share. The price of the Executing Purchases was \$0.1625 per share, a decline of -0.49%.

108. Clear Street began to cancel the artificial supply injected by these Baiting Orders within 0.000175 seconds of its Executing Purchases. By 15:29:07.622750 Clear Street had cancelled the artificial supply injected by all of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by Clear Street

109. Clear Street had a motive to engage in spoofing in order to close a short position in the shares of MULN stock. Specifically, on June 20, 2023 at 14:44:58.884285192, Clear

Street sold short 100 shares of MULN stock at a price of \$0.1738 per share, yielding a return of 6.953846% by the Executing Purchases at the artificially depressed price of \$0.1625 per share.

110. While the dollar profits on that single transaction were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through Clear Street's algorithms that operate in thousands of securities. On an annualized basis, the return on this Spoofing Episode is extremely significant. Achieving that return every day over one year would have multiplied Clear Street's capital invested in Spoofing Episodes with that return *more than 17-fold* over the course of the year.

111. DTCC records for the settlement date of June 22, 2023, reflecting purchases and sales executed on June 20, 2023, show a net increase of 106,900 shares in Clear Street's closing balance, from a closing balance of 5,444 shares on the settlement date of June 21, 2023 to a closing balance of 112,344 shares on the settlement date of June 22, 2023. The date which DTCC data indicate net purchases by Clear Street, June 20, 2023, was a Pricing Date for sales of shares by Mullen.

2. IMC

a) Example: December 15, 2022 - 13:27:30

112. On December 15, 2022 at 13:27:30.147521, Mullen calculated that the national best bid and offer for Mullen was a bid to purchase 19 shares at a price of \$0.2886 per share and an offer to sell 82 shares at a price of \$0.29 per share. From 13:25:30.147521 to 13:27:30.147521, IMC placed 1,100 shares of Baiting Orders at prices ranging from \$0.32 to \$0.292 per share.⁴⁹ As of 13:27:30.147521 the submission of these Baiting Orders left IMC with

⁴⁹ Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$0.33 to \$0.31 per share.

an imbalanced order book position favoring the sell side consisting of bids to purchase 383 shares at prices ranging from \$0.26 per share to \$0.2886 per share, and an offer to sell 1,800 shares at prices ranging from \$0.32 per share to \$0.85 per share.

113. Between 13:27:30.147521 and 13:29:30.147521, IMC did not sell any shares of Mullen, consistent with the fictitious nature of the Baiting Orders.

114. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 13:27:30.147521, IMC took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 283 shares, at a price of \$0.2886 per share, which was below the prevailing best offer of \$0.29 per share (the price that IMC would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

115. Not only did IMC purchase these shares at a price below the prevailing best offer at the time, but IMC's Baiting Orders drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 13:25:30.147521, two minutes prior to the Executing Purchases, the share price of Mullen was \$0.3013 per share. The price of the Executing Purchases was \$0.2886 per share, a decline of -4.22%.

116. IMC began to cancel the artificial supply injected by these Baiting Orders within 3.145169 seconds. By 13:29:30.147521, IMC had cancelled the artificial supply injected by all of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by IMC.

b) Example: March 10, 2023 - 15:22:15

117. On March 10, 2023 at 15:22:15.577845, Plaintiffs calculated that the national best bid and offer for MULN was a bid to purchase 12 shares at a price of \$0.1672 per share and an offer to sell 5 shares at a price of \$0.1674 per share.

118. From 15:20:15.577845 to 15:22:15.577845, IMC placed 300 shares of Baiting Orders at prices ranging from \$0.19 to \$0.18 per share.⁵⁰ As of 15:22:15.577845 the submission of these Baiting Orders left IMC with an imbalanced order book position favoring the sell side consisting of bids to purchase 900 shares at prices ranging from \$0.15 per share to \$0.1672 per share, and an offer to sell 100 shares at a price of \$0.18 per share.

119. Between 15:22:15.577845 and 15:24:15.577845, IMC did not sell any shares of MULN, consistent with the fictitious nature of the Baiting Orders.

120. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 15:22:15.577845 IMC took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 300 shares, at a price of \$0.1672 per share, which was below the prevailing best offer of \$0.1674 per share (the price that IMC would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

121. Not only did IMC purchase these shares at a price below the prevailing best offer at the time, but the Baiting Orders by IMC drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 15:20:15.577845, two minutes prior to the Executing Purchases, the share price of MULN stock was \$0.1688 per share. The price of the Executing Purchases was \$0.1672 per share, a decline of -0.95%.

122. IMC began to cancel the artificial supply injected by these Baiting Orders within 6.955536 seconds. By 15:24:15.577845 IMC had cancelled the artificial supply injected by all

⁵⁰ Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is the same: \$0.19 to \$0.18 per share.

of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by IMC.

123. IMC had a motive to engage in spoofing in order to close a short position in the shares of MULN stock. Specifically, on March 9, 2023 at 09:44:26.736743848, IMC sold short 100 shares of MULN stock at a price of \$0.1948 per share, yielding a return of 16.50718% by the Executing Purchases at the artificially depressed price of \$0.1672 per share.

124. While the dollar profits on that single transaction were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through IMC's algorithms that operate in thousands of securities. On an annualized basis, the return to this Spoofing Episode is extremely significant. Achieving that return every day over one year would have multiplied IMC's capital invested in Spoofing Episodes with that return *more than 41-fold* over the course of the year.

125. IMC cleared through Goldman Sachs. While other parties also cleared through Goldman Sachs, DTCC records for the settlement date of March 14, 2023, reflecting purchases and sales executed on March 10, 2023, show a net increase of 825,944 shares in Goldman Sachs's closing balance, from a closing balance of 24,432,488 shares on the settlement date of March 13, 2023 to a closing balance of 25,258,432 shares on the settlement date of March 14, 2023. The date which DTCC data indicate net purchases by Goldman Sachs, March 10, 2023, was a Pricing Date for sales of shares by Mullen.

3. UBS

a) Example: August 17, 2023 - 15:55:27

126. On August 17, 2023 at 15:55:27.173750, Plaintiffs calculated that the national best bid and offer for Mullen was a bid to purchase two shares at a price of \$0.8026 per share and an offer to sell 11 shares at a price of \$0.8054 per share. From 15:53:27.173750 to

15:55:27.173750, UBS placed 300 shares of Baiting Orders at prices ranging from \$1.05 to \$0.8028 per share.⁵¹ As of 15:55:27.173750 the submission of these Baiting Orders left UBS with an imbalanced order book position favoring the sell side consisting of bids to purchase 7,401 shares at prices ranging from \$0.5826 per share to \$0.8026 per share, and an offer to sell 123,173 shares at prices ranging from \$0.8525 per share to \$999.00 per share.

127. Between 15:55:27.173750 and 15:57:27.173750, UBS did not sell any shares of Mullen, consistent with the fictitious nature of the Baiting Orders.

128. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 15:55:27.173750, UBS took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 200 shares, at a price of \$0.8026 per share, which was below the prevailing best offer of \$0.8054 per share (the price that UBS would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

129. Not only did UBS purchase these shares at a price below the prevailing best offer at the time, but UBS's Baiting Orders drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 15:53:27.173750, two minutes prior to the Executing Purchases, the share price of Mullen was \$0.8176 per share. According to Plaintiff's calculations, the price of the Executing Purchases was \$0.8026 per share, a decline of -1.83%.

130. UBS began to cancel the artificial supply injected by these Baiting Orders within 59.25258 seconds. By 15:57:27.173750, UBS had cancelled the artificial supply injected by all

⁵¹ Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$1.05 to \$0.97 per share.

of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by UBS.

131. UBS sold shares of Mullen both before and after this Executing Purchase, which enabled it to convert profits from its spoofing activity to cash regardless of whether the Executing Purchases established a long position in Mullen or were used to close out a previously established short position. Specifically, UBS sold 12,200 shares at a price of \$0.804 per share at 15:57:38, after the Executing Purchase, which would have generated a return of 0.1744331% on its Executing Purchases at the artificially depressed price of \$0.8026 per share. UBS also sold two shares at a price of \$0.8299 per share at 15:50:28 on August 17, 2023, prior to the Executing Purchase, which would have generated a return of 3.401445% if that sale created a short position that was closed out by the Executing Purchases at the artificially depressed price of \$0.8026 per share.

132. While the dollar profits on either of those single transactions were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through UBS's algorithms that operate in thousands of securities. On an annualized basis, the return to this Spoofing Episode is extremely significant. Achieving the latter return every day over one year would have multiplied UBS's capital invested in Spoofing Episodes with that return *more than eight-fold* over the course of the year.

b) Example: August 23, 2023 - 15:55:35

133. On August 23, 2023 at 15:55:35.150059, Mullen calculated that the national best bid and offer for MULN was a bid to purchase 10 shares at a price of \$0.829 per share and an offer to sell 20 shares at a price of \$0.8291 per share. At 15:55:35.150059, UBS placed 24,140

shares of Baiting Orders at prices ranging from \$1.50 to \$0.79 per share.⁵² As of 15:55:35.150059 the submission of these Baiting Orders left UBS with an imbalanced order book position favoring the sell side consisting of bids to purchase 159,460 shares at prices ranging from \$0.04 per share to \$0.829 per share, and offers to sell 179,275 shares at prices ranging from \$0.84 per share to \$999.00 per share.

134. Between 15:55:35.150059 and 15:57:35.150059, UBS did not sell any shares of MULN, consistent with the fictitious nature of the Baiting Orders.

135. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 15:55:35.150059, UBS took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 1,000 shares, at a price of \$0.829 per share, which was below the prevailing best offer of \$0.8291 per share (the price that UBS would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

136. Not only did UBS purchase these shares at a price below the prevailing best offer at the time, but UBS's Baiting Orders drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 15:53:35.150059, two minutes prior to the Executing Purchases, the share price of MULN stock was \$0.8527 per share. The price of the Executing Purchases was \$0.8290 per share, a decline of -2.78%.

137. UBS began to cancel the artificial supply injected by these Baiting Orders within 7.65998 seconds. By 15:57:35.150059 UBS had cancelled the artificial supply injected by all of

⁵² Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$1.05 to \$0.84 per share.

its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by UBS.

138. UBS had a motive to engage in spoofing in order to close a short position in the shares of MULN stock. On August 23, 2023 at 15:55:06.069520117, UBS sold short 200 shares of MULN stock at a price of \$0.8469 per share, yielding a return of 2.159228% by the Executing Purchases at the artificially depressed price of \$0.829 per share.

139. While the dollar profits on this single transaction were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through UBS's algorithms that operate in thousands of securities. On an annualized basis, the return to this Spoofing Episode is extremely significant. Achieving the return every day over one year would have multiplied UBS's capital invested in Spoofing Episodes with that return *more than five-fold* over the course of the year.

c) Example: March 17, 2023 - 15:55:13

140. On March 17, 2023 at 15:55:13.363960, Plaintiffs calculated that the national best bid and offer for MULN was a bid to purchase 29 shares at a price of \$0.1374 per share and an offer to sell 318 shares at a price of \$0.1375 per share.

141. From 15:53:13.363960 to 15:55:13.363960, UBS placed 2,500 shares of Baiting Orders at a price of \$0.1367 per share.⁵³ As of 15:55:13.363960 the submission of these Baiting Orders left UBS with an imbalanced order book position favoring the sell side consisting of bids to purchase 410,099 shares at prices ranging from \$0.1015 per share to \$0.1374 per share, and an offer to sell 910,600 shares at prices ranging from \$0.1397 per share to \$80.00 per share.

⁵³ Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$0.1397 per share.

142. Between 15:55:13.363960 and 15:57:13.363960, UBS did not sell any shares of MULN, consistent with the fictitious nature of the Baiting Orders.

143. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 15:55:13.363960 UBS took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 100 shares, at a price of \$0.1374 per share, which was below the prevailing best offer of \$0.1375 per share (that price that UBS would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

144. Not only did UBS purchase these shares at a price below the prevailing best offer at the time, but the Baiting Orders by UBS drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 15:53:13.363960, two minutes prior to the Executing Purchases, Plaintiffs calculated that the share price of MULN stock was \$0.139 per share. The price of the Executing Purchases was \$0.1374 per share, a decline of -1.15%.

145. UBS began to cancel the artificial supply injected by these Baiting Orders within 26.56178 seconds. By 15:57:13.363960 UBS had cancelled the artificial supply injected by all of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by UBS.

146. UBS sold shares of MULN both before and after this Executing Purchase, which enabled it to convert profits from its spoofing activity to cash regardless of whether the Executing Purchases established a long position in MULN or were used to close out a previously established short position. Specifically, UBS sold 15,500 shares at a price of \$0.1375 per share at 15:58:45 on March 21, 2023, after the Executing Purchase, which would have generated a return of 0.0727802% on its Executing Purchases at the artificially depressed price of \$0.1374

per share. UBS also sold 26,800 shares at a price of \$0.1478 per share at 15:59:41 on March 15, 2023, prior to the Executing Purchase, which would have generated a return of 7.569141% if that sale created a short position that was closed out by the Executing Purchases at the artificially depressed price of \$0.1374 per share.

147. While the dollar profits on either of those single transactions were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through UBS's algorithms that operate in thousands of securities. On an annualized basis, the return to this Spoofing Episode is extremely significant. Achieving the latter return every day over one year would have multiplied UBS's capital invested in Spoofing Episodes with that return *more than 19-fold* over the course of the year.

148. DTCC records for the settlement date of March 21, 2023, reflecting purchases and sales executed on March 17, 2023, also show a net increase of 144,902 shares in UBS's closing balance, from a closing balance of 147,202 shares on the settlement date of March 20, 2023 to a closing balance of 292,104 shares on the settlement date of March 21, 2023. The date which DTCC data indicate net purchases by UBS, March 17, 2023, was a Pricing Date for sales of shares by Mullen.

d) Example: June 20, 2023 - 09:31:18

149. On June 20, 2023 at 09:31:18.981766, Plaintiffs calculated that the national best bid and offer for MULN was a bid to purchase 4 shares at a price of \$0.2337 per share and an offer to sell 65 shares at a price of \$0.236 per share.

150. From 09:29:18.981766 to 09:31:18.981766, UBS placed 536,589 shares of Baiting Orders at prices ranging from \$1000 to \$0.24 per share.⁵⁴ As of 09:31:18.981766 the

⁵⁴ Those figures represent the price range of subsequently cancelled orders. The price range in that time interval of created orders is similar: \$4.00 to \$0.24 per share.

submission of these Baiting Orders left UBS with an imbalanced order book position favoring the sell side consisting of bids to purchase 73,841 shares at prices ranging from \$0.0111 per share to \$0.234 per share, and an offer to sell 536,489 shares at prices ranging from \$0.24 per share to \$1000.00 per share.

151. Between 09:31:18.981766 and 09:33:18.981766, UBS did not sell any shares of MULN, consistent with the fictitious nature of the Baiting Orders.

152. The Baiting Orders successfully induced the entry of sell orders from other market participants, driving the price of Mullen shares downward. At 09:31:18.981766 UBS took advantage of this artificial downward pressure and executed Executing Purchases to buy a total of 213 shares, at a price of \$0.2340 per share, which was below the prevailing best offer of \$0.2360 per share (the price that UBS would have had to pay to purchase shares of MULN stock at that moment if it had not engaged in spoofing activity).

153. Not only did UBS purchase these shares at a price below the prevailing best offer at the time, but the Baiting Orders by UBS drove the price below where it was before the Baiting Period as well. Specifically, Plaintiffs calculated that at 09:29:18.981766, two minutes prior to the Executing Purchases, the share price of MULN stock was \$0.2371 per share. The price of the Executing Purchases was \$0.2340 per share, a decline of -1.31%.

154. UBS began to cancel the artificial supply injected by these Baiting Orders within 1.205034 seconds. By 09:33:18.981766 UBS had cancelled the artificial supply injected by all of its Baiting Orders, eliminating the artificial sell-side imbalance that had been falsely conveyed and injected into the market by UBS.

155. UBS had a motive to engage in spoofing in order to close a short position in the shares of MULN stock. Specifically, on June 15, 2023 at 15:57:41.878864162, UBS sold short

1,900 shares of MULN stock at a price of \$0.2585 per share, yielding a return of 10.47009% by the Executing Purchases at the artificially depressed price of \$0.234 per share.

156. While the dollar profits on this single transaction were small, the profits from spoofing activity are far larger when performed repeatedly and compounded through UBS's algorithms that operate in thousands of securities. On an annualized basis, the return to this Spoofing Episode is extremely significant. Achieving the return every day over one year would have multiplied UBS's capital invested in Spoofing Episodes with that return *more than 26-fold* over the course of the year.

F. Defendants' Spoofing Caused Plaintiffs to Suffer Significant Losses

157. During the Relevant Period, Mullen sold or issued for value over 5 billion Mullen shares, and the Shareholders each sold various amounts of shares. As set forth below, many of the Known Defendants' Spoofing Episodes occurred immediately prior to Plaintiffs' sales or issuances. Because Plaintiffs sold or issued for value Mullen shares during the Relevant Period at times when the prices of those shares were artificially deflated due to Defendants' spoofing, Plaintiffs were directly damaged by Defendants' unlawful conduct.

158. Each Spoofing Episode was intended to and had a significant immediate impact on the price of Mullen's shares. The after-effects of each Spoofing Episode could be felt most strongly within a minute of the cancellation of the Baiting Orders, with a significant and observable effect persisting for hours and lingering for multiple days.

1. The Lingering Effects of Accumulated Spoofing Episodes

159. According to the leading economic literature on the impact of spoofing—discussed below—spoofing can have a lingering impact on the price of a security that persists for a much longer period of time. When the volume of spoofing is high enough, those effects can aggregate to a substantial price impact.

160. Thus, the impact of the collective spoofing activity extended beyond each specific Spoofing Episode, because the market neither immediately nor fully rebounded from the manipulated prices once each of the spoofing events were completed.

161. This effect—the persistence of the price impact of manipulation—is well-established in the market microstructure literature. As Nobel prize-winning economist Professor Milgrom has explained: “[b]ecause manipulative trades are viewed by the market participants as potentially informed, and potentially informed trades can result in permanent price impact, manipulative trades can lead to permanent price impact.”⁵⁵ Based on an extensive review of applicable literature, Dr. Milgrom provides two reasons for why market participants cannot readily identify manipulative trades.

162. *First*, it is highly improbable that manipulative trades can immediately be identified as manipulative and uninformed by market participants. For any agent in the market, the incentive to gather private information—and thus to become an informed trader—is directly related to the volume of its trades and the size of its positions.

⁵⁵ Expert Report of Professor Paul Milgrom at ¶ 21, *Alaska Electrical Pension Fund v. Bank of America*, Case No. 14-cv-7126 (JMF) (S.D.N.Y.) (Jan. 22, 2018). The Milgrom Report is attached as Exhibit 5. Dr. Milgrom used the term “permanent price impact” to discuss an expert report previously submitted in that litigation by Dr. Craig Pirrong, which described peer-reviewed literature *that found the price impact of market manipulation lasted for more than one day*. Expert Report of Dr. Craig Pirrong, *Alaska Electrical Pension Fund v. Bank of America*, No. 14 Civ. 7126 (JMF), ECF No. 503-4, Aug. 2, 2017, at *22 n. 14 (“Carole Comerton-Forde and Talis J. Putnins, Measuring Closing Price Manipulation, 20 J. of Financial Intermediation (2011) 135, present empirical evidence on the price effects of 184 manipulations of the closing prices on US and Canadian stock exchanges. During these manipulations, traders bought large quantities of stock shortly before the close. Comerton-Forde and Putnins find that (a) stock prices rose significantly at the close, and (b) the increases were only partially reversed the next day. The fact that the reversals were only partial indicates that the manipulations had a permanent effect on prices.”) (emphasis added).

163. Defendants are among the largest market participants and have powerful incentives to be well-informed. Other participants would likely expect this, and therefore have good reason to treat their trades as potentially informed. This tendency of large traders to be well informed is also observed by others in the market microstructure literature.

164. *Second*, Professor Milgrom discusses the improbability that the public will eventually come to know which trades were manipulative and uninformed.

165. Professor Milgrom further explained the fact that manipulators eventually must unwind their positions does not undermine the persistent impact of the manipulation, rather, “[t]here is, however, no symmetry in the manipulative trade and its unwinding. A manipulative trader who wants, for example, to raise a price will buy in a way that maximizes the price impact. However, when unwinding the trade, that same trader will seek to minimize the price impact to avoid losses. Therefore, the upward effect can be expected to exceed the downward effect from unwinding—and that difference may represent a permanent effect.” (Emphasis added.)

166. Defendants engaged in asymmetric behavior that yielded an asymmetric price impact between manipulative Spoofing Episodes and the unwinding of their manipulative conduct. The total share volume of sell-side Baiting Orders exceeded the share volume of buy-side Executing Purchases by 169-fold. *See supra*, ¶¶ 58, 61 (470.9 million shares of Baiting Orders to 2.78 million shares of Executing Purchases during Spoofing Episodes). As such, the price impact of spoofed Baiting Orders was not fully unwound: the downward pressure applied by sell-side orders exceeded the upward pressure applied by buy-side orders. As Professor Milgrom explains, this difference between the sell-side and buy-side pressure yields a persistent

and “permanent” price impact—meaning that it does not inevitably or naturally unwind over time.

167. Professor Milgrom also noted that it cannot simply be assumed that “professional traders and others will tend to act on the mistaken pricing” because manipulators have a “corresponding incentive . . . to conceal their intent, in order to benefit from their manipulation and unwind their positions to avoid or minimize loss.”

168. Professor Milgrom discusses the extensive economic literature establishing that the price impact of *any* form of trade-based manipulation, including spoofing, is not likely to fully reverse. Peer-reviewed research has found that order cancellations drive the price *up* by *less* than new orders drive the price *down*.⁵⁶ For this reason, the impact of Baiting Orders is not likely to dissipate merely because those orders were subsequently cancelled. Manipulative spoofing causes the execution of “*trades*,” not only the placement of orders, because Baiting Orders induce other market participants to sell shares at artificially depressed transaction prices.

169. The “permanent price impact” that Professor Milgrom discussed as resulting from manipulative trading is established in the economic literature and is not limited to same-day effects.⁵⁷ For example, one heavily cited peer-reviewed study shows that “both ask and bid tend

⁵⁶ Jonathan Brogaard, Terrence Hendershott & Ryan Riordan, *Price Discovery without Trading: Evidence from Limit Orders* 74 J. FIN. 1583, 1635 (2019) (magnitude of price impact of order placement exceeds magnitude of price impact of order cancel).

⁵⁷ Dr. Milgrom used the term “permanent price impact” to discuss an expert report previously submitted in that litigation by Dr. Craig Pirrong, which described peer-reviewed literature *that found the price impact of market manipulation lasted for more than one day*. Expert Report of Dr. Craig Pirrong, *Alaska Electrical Pension Fund v. Bank of America*, No. 14 Civ. 7126 (JMF), ECF No. 503-4, Aug. 2, 2017, at *22 n. 14 (“Carole Comerton-Forde and Talis J. Putnins, Measuring Closing Price Manipulation, 20 J. of Financial Intermediation (2011) 135, present empirical evidence on the price effects of 184 manipulations of the closing prices on US and Canadian stock exchanges. During these manipulations, traders bought large quantities of stock shortly before the close. Comerton-Forde and Putnins find that (a) stock prices rose significantly at the close, and (b)

to significantly increase (decrease) after the arrival of a buy (sell) limit order,” “quotes converge to a (new) permanent level,” and “large volumes overbidding the prevailing quote cause a long-term upward movement of the bid.”⁵⁸

2. Injury in Fact and Loss Causation

170. As set forth more fully herein, Defendants’ fraudulent trading activities had both temporary and long-term adverse effects on the market price of Mullen’s securities.

171. During the Relevant Period, the Spoofing Events identified by the Manipulation Analysis occurred on 359 out of 504—or 71%—of trading days.

172. Based on records maintained by the Shareholder Plaintiffs, the Shareholder Plaintiffs sold various amounts of shares during the Relevant Period.

173. Based on records maintained by Mullen, over 5 billion shares were sold or issued for value by Mullen during the Relevant Period. Many of these sales consisted of the issuance of shares to satisfy debt obligations or other liabilities where the sale price of the shares was formulaically derived from secondary market closing prices on one or more days on which—as indicated by the Manipulation Analysis—those prices were artificially depressed by Defendants’ manipulative spoofing.

174. These pricing formulas can be divided into two general groups. The first group consists of sales of common stock which occurred at the closing price of one or more Pricing Dates on which those prices were artificially depressed by Defendants’ manipulative spoofing. The second group consists of the issuance of shares to satisfy debt obligations or other liabilities

the increases were only partially reversed the next day. The fact that the reversals were only partial indicates that the manipulations had a permanent effect on prices.”) (emphasis added).

⁵⁸ Nikolaus Hautsch & Ruihong Huang, *The Market Impact of a Limit Order*, 36 J. ECON. DYN. & CNTRL 501, 511, 5134 (2012).

(such as cashless warrant exercises) where the value of the liabilities extinguished by the sale of shares was based on the closing price of one or more Pricing Dates on which those prices were artificially depressed by Defendants' manipulative spoofing. Collectively, the dates for which the closing prices were used to formulaically derive the value of the sale or issuance are the "Pricing Dates."

175. Exhibit 2 presents sales of Mullen shares or issuances for value by Mullen at prices artificially depressed by the Known Defendants' spoofing activity. In this exhibit, Spoofing Episodes perpetrated by each Known Defendant occurred on the designated Pricing Date, thereby depressing the price of Mullen shares sold or issued by Mullen on the indicated transaction date, which was executed at the closing price of Mullen shares on the Pricing Date.⁵⁹

176. Exhibit 3 presents sales of Mullen shares by Plaintiff Shayan Khorrami. Plaintiff Shayan Khorrami sold Mullen shares on the open market in close proximity to times when Known Defendants participated in spoofing schemes. For example, on August 3, 2023, Plaintiff Shayan Khorrami sold 100,000 shares of MULN stock at 1:37pm, mere minutes after Clear Street engaged in a Spoofing Episode at 1:34:40pm that same date. Similarly, on June 15, 2023, Plaintiff Shayan Khorrami sold 25,243 shares of MULN stock at 3:29pm, less than two hours after UBS engaged in a Spoofing Episode at 3:19:27pm that same date.

177. Exhibit 4 presents sales of Mullen shares by Plaintiff Hyon Cha. Plaintiff Hyon Cha sold Mullen shares on the open market in close proximity to times when Known Defendants participated in spoofing schemes. For example, on May 11, 2022, Plaintiff Hyon Cha sold 2,904

⁵⁹ Throughout this table: (i) the "average price decline" refers to the decline in the price of executed transactions from two minutes before the Executing Purchase to the price of the Executing Purchase; (ii) a single asterisk ("*") denotes at least one Spoofing Episode after 3:00pm on the Pricing Date; and (iii) a double asterisk ("**") denotes at least one Spoofing Episode after 3:45pm on the Pricing Date.

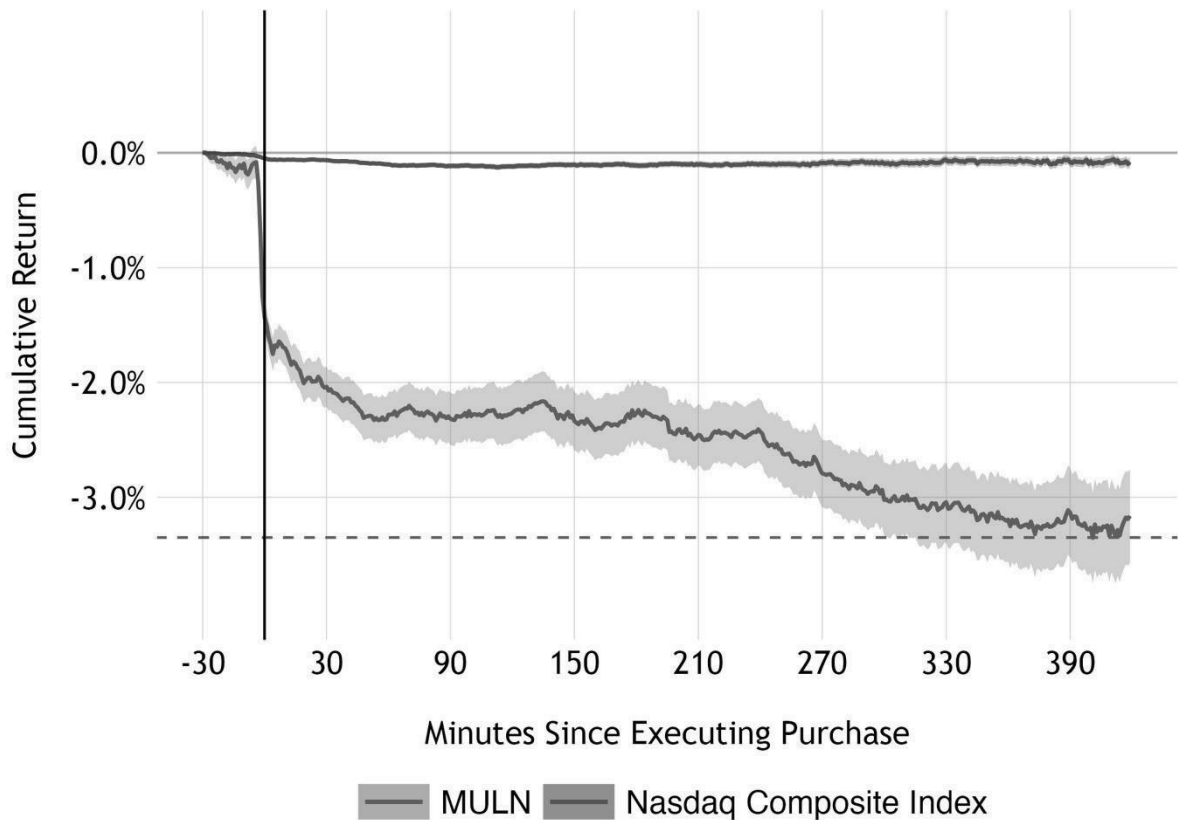
shares of MULN stock at 2:31pm, two hours after Clear Street engaged in a Spoofing Episode at 12:10:23pm that same date.

178. Defendants' fraudulent trading activities had both temporary and long-term adverse effects on the market price of Mullen shares. As discussed above, the artificially depressed price resulting from any given Spoofing Episode does not fully recover to the price that existed prior to the Spoofing Episode. And when spoofing events occur continuously throughout the day and continue without interruption over a protracted period of time, the long-term cumulative effect of spoofing places enormous downward pressure on the market price of a security, which is persistent and long-lasting.

179. The price impact of Defendants' spoofing activity was not limited to the time period immediately following each individual Spoofing Episode. As a result, Plaintiffs' and Mullen's sales and issuances for value of its stock throughout the Relevant Period were negatively affected by Defendants' spoofing that occurred in close proximity to those sales and issuances and by the lingering price impact of the Spoofing Episodes.

180. While each Spoofing Episode had a small negative impact on the price of Mullen shares, the placement and cancellation of Baiting Orders throughout the Relevant Period had the cumulative effect of driving Mullen share price down during the Relevant Period. According to the Manipulation Analysis, Defendants' wrongful conduct proximately caused the losses that (i) Mullen suffered when it sold or issued for value shares at times during which the market price of Mullen shares was being driven downward or was driven downward by the lingering effect of past Spoofing Episodes; and (ii) Plaintiffs suffered when they sold Mullen shares at times during which the market price of Mullen shares was driven downward.

181. Defendants' spoofing had a persistent and long-lasting price impact on the share price of Mullen, even when adjusted for market-wide price movements. The following graph shows the average cumulative return (percentage price change) across Spoofing Episodes identified by the Manipulation Analysis—from thirty minutes prior to each Executing Purchase to the end of the trading day. The red line shows Mullen's return, while the blue line shows, for comparison, the return on the Nasdaq Composite Index. The dashed line shows the final cumulative return over the minutes following the Spoofing Episodes indicated by the Manipulation Analysis: -3.35%, which is highly statistically significant in a standard t-test ($p < .0001$).



182. Several facts are immediately apparent from this graph. First, because the Spoofing Episodes occurred at short, discrete intervals in time, it is generally the case that news

about Mullen or other firm-specific events cannot explain these price declines. For the price decline following Spoofing Episodes to be driven by these events, the event would need to occur at exactly the same time as the Spoofing Episodes. But these events are not necessarily occurring at the same time as Spoofing Episodes. Thus, the price impact of those events is incorporated into the price of Mullen shares at a different point in time—either long before the Spoofing Episodes or long after, but not at the exact moment of those Spoofing Episodes.

183. Moreover, to whatever extent confounding information that negatively impacted the price of Mullen may have emerged at around the same time as the Known Defendants’ Spoofing Episodes, it is exceedingly unlikely and implausible that confounding information emerged at precisely the same time as so many of these Spoofing Episodes, repeatedly, so as to confound the *average* price impact of these episodes. This is all the more convincing when considering that each Spoofing Episode occurred at points in time that are “quasi-random,” meaning, they are unlikely to be systematically correlated with confounding information such as negative news releases. This strengthens the inference that the decline in the share price of MULN stock was caused by Defendants’ participation in spoofing schemes.

184. Second, the fact that there is no material or statistically significant price declines in the minutes leading up to the Spoofing Episodes strengthens the interpretation that the decline in the price at that time was caused by those episodes. It is standard practice in the economic literature to examine the presence or absence of so-called “pre-trends,” which might indicate that a purported causal effect was contaminated by a spurious event that was occurring prior to the intervention of interest.⁶⁰

⁶⁰ A large body of literature in economics verifies the absence of meaningful effects prior to a causal intervention of interest. For one example, *see* Sylvia A. Allegretto, Arindrajit Dube &

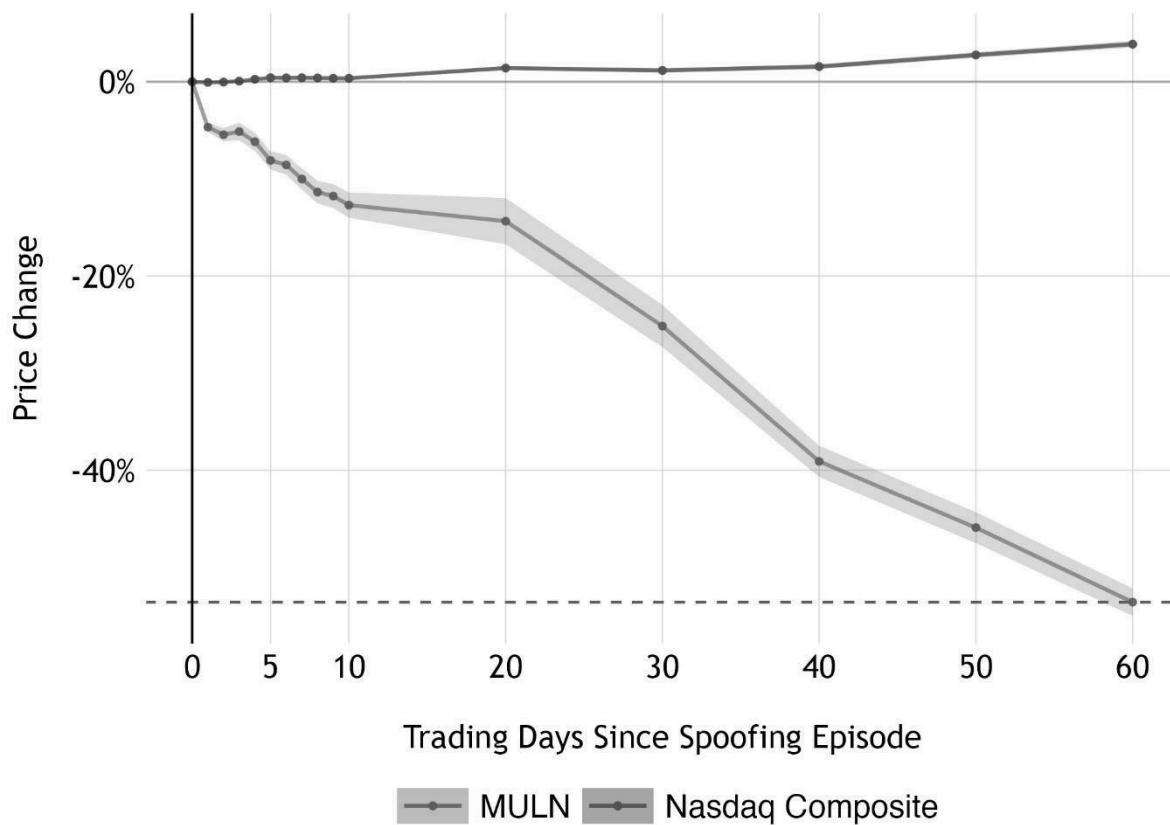
185. Third, the fact that the Nasdaq Composite Index is unchanged over the Spoofing Episodes suggests that the price decline in Mullen shares is unlikely to have been caused by market-wide factors that happen to have occurred at the same time as these episodes.

186. Finally, this graph shows that, as indicated by the Manipulation Analysis, the average price impact of the Spoofing Episodes *persists up to and even beyond an entire trading day and does not revert within that time*. Based on this evidence, it is plausible to infer that the entirety of this price impact of these Spoofing Episodes was persistent and continued over an extended period of time.

187. Moreover, these price declines accompanying the Spoofing Episodes are unlikely to have been caused by any dilution accompanying the issuance of shares by Mullen. To the extent any dilution negatively affected the price of Mullen shares, that would have occurred through the additional sale of newly issued shares. However, the Spoofing Episodes occurred at short, discrete intervals in time. There is no reason to believe—nor has Mullen identified any evidence to consider—that purchasers of newly issued shares were aware of Spoofing Episodes, much less that those shares were likely to be sold, during these short, discrete intervals in time accompanying the Spoofing Episodes. It is *extremely* unlikely, as a statistical matter, that any such sales occurred systematically within narrow, two-minute windows of time. The sharp decline in the price of Mullen shares in those very minutes indicates that dilution was not responsible for that decline, because any such price impact to dilution would have naturally occurred over the course of time as newly issued shares were sold into the market.

Michael Reich, *Do Minimum Wages Really Reduce Teen Employment? Accounting for Heterogeneity and Selectivity in State Panel Data*, 50 INDUSTRIAL RELATIONS: A JOURNAL OF ECONOMY AND SOCIETY 205 (2011) (examining the effect of minimum wage increases on teen employment by showing “stable coefficients [close to zero] prior to the minimum wage increase”).

188. The sustained, repetitive, and continuous stream of Defendants' spoofing had a persistent long-term negative impact on the price of Mullen shares. The following graph shows the average change in MULN share price from the two minutes prior to Spoofing Episodes to the trading days thereafter, as well as the average changes in the Nasdaq composite index over that same time. (95% confidence intervals are illustrated by the shaded regions around the solid lines.)



189. As the above graph shows, a negative price impact caused by the Spoofing Episodes persisted following those episodes, during times the Nasdaq Composite Index was increasing in value. At least some of this long-term decline was caused by the Spoofing Episodes.

190. Defendants' spoofing schemes deprived Mullen of its right and ability to trade on U.S. exchanges that were free of manipulation and caused the losses that Mullen suffered when it sold or issued for value more than 5 billion shares into a manipulated market.

3. Defendants Intentionally Hid Their Manipulative Spoofing Schemes

191. As described above, the manipulative process and spoofing requires that the true intent of the spoofer be hidden from the market. If other market participants knew that the Baiting Orders were not bona fide orders—but instead entered solely to induce other traders to move the price of the stock—those other traders would naturally ignore the Baiting Orders when making trading decisions.

192. Defendants intentionally hid the true purpose of the Baiting Orders and thus the nature of their manipulative spoofing scheme in order to achieve their illegal and improper goal of depressing the price of Mullen shares, and their success in manipulating that price demonstrates that their spoofing activity was concealed from the market. Indeed, the presence of anonymized orders identified by the Methodology further indicate that Defendants were attempting to hide their identities when engaging in spoofing activity.

VI. CLAIMS FOR RELIEF

A. First Claim for Relief for Spoofing in Violation of Section 10(b) of the Exchange Act of 1934 and Rule 10b-5(a) and (c) Promulgated Thereunder

193. Plaintiffs incorporate by reference paragraphs 1 to 192 as if fully set forth herein.

194. During the Relevant Period, the Manipulation Analysis indicates that Defendants participated in a scheme that was intended to and did manipulate the market price of Mullen shares by placing Baiting Orders on Nasdaq. Defendants' Baiting Orders were used to further a market manipulation scheme that had a direct and immediate adverse impact on the market price of Mullen securities being traded on Nasdaq.

195. Rules 10b-5(a) and (c) make it unlawful for any party to “(a) employ any device, scheme or artifice to defraud” and “(c) to engage in any act, practice, or course of business which operates or would operate as a fraud or deceit.”

196. The Manipulation Analysis indicates that Defendants are liable for (i) placing Baiting Orders on Nasdaq that had no legitimate or economic purpose, were never intended to be executed, and were part of a spoofing scheme; and (ii) placing Executing Orders that were intended to complete the Spoofing Episode that operated as a scheme to manipulate the market price of Mullen securities.

197. As set forth more fully in paragraphs 66 through 93 above, strong circumstantial evidence exists that Defendants’ conduct reflects the intentional or reckless nature of their unlawful scheme and course of conduct to defraud the market in Mullen securities. To the extent Defendants manipulated the market for their own principal or proprietary accounts, Defendants had a strong profit motive—although each spoofing episode might not yield large profits, as discussed above, the use of spoofing across securities can yield significant aggregate profits. To the extent Defendants participated in their customers’ or clients’ spoofing, Defendants similarly had a strong profit motive to shirk their gatekeeping responsibilities—their customers’ trading generates significant revenue that would be jeopardized if Defendants developed a reputation of restricting their customers’ or clients’ trading.

198. At all relevant times to the allegations in this First Amended Complaint, Mullen relied on the efficiency of the market as an active participant in the market while issuing securities. Mullen’s securities were intended to be traded in an efficient market, in which all market participants had access to information that was relevant to the fair and orderly trading of a security. As indicated by the Manipulation Analysis, Defendants’ scheme to manipulate was

structured in a manner that concealed Defendants' unlawful intentions and made it extremely difficult for reasonably diligent market participants—like Plaintiffs—to discover either the operative facts constituting the market manipulation scheme or the identities of the perpetrators of these schemes.

199. During the Relevant Period, despite Plaintiffs' diligence, they did not discover—nor could a reasonably diligent plaintiff have discovered—the facts constituting the market manipulation claims on Nasdaq or the identities of the perpetrators of these market manipulation schemes. Thus, as indicated by the Manipulation Analysis, when Mullen sold or issued for value shares of Mullen on Nasdaq and the Shareholder Plaintiffs sold shares of Mullen on Nasdaq, the market prices of Mullen shares were not being determined by the natural forces of supply and demand but, rather, by the false and misleading pricing information injected into the market by the Defendants.

200. Defendants' fraudulent trading activities as alleged more fully above had both a temporary and long-term adverse effect on the market price of Mullen shares.

201. During the Relevant Period, Mullen sold or issued for value over 5 billion Mullen shares and the Shareholder Plaintiffs sold various amounts of shares during the Relevant Period. As a direct and proximate result of Defendants' wrongful conduct as alleged more fully above, Mullen suffered damages in that it sold or issued for value Mullen shares at manipulated prices, in reliance on an assumption of an efficient market free of manipulation.

202. The Manipulation Analysis indicates that each Defendant used the means or instrumentalities of interstate commerce, the facilities of a national securities exchange, and the mail, to trade Mullen's securities by placing, routing, filling, and executing these orders.

203. The Manipulation Analysis also indicates that Clear Street Markets and Clear Street LLC conspired to jointly participate in the Clear Street spoofing schemes alleged in this Amended Complaint, and are thus jointly and severally liable for all Clear Street spoofing.

204. The Manipulation Analysis further indicates that each Defendant knowingly employed devices, schemes, or artifices to defraud and engaged in acts, practices, and a course of conduct which operated as a fraud upon Mullen and the market in violation of Section 10(b) and Rule 10b-5 promulgated under the Exchange Act.

B. Second Claim for Relief for Spoofing in Violation of Section 9(a)(2) of The Securities Exchange Act of 1934

205. Plaintiffs incorporate by reference paragraphs 1 to 204 as if fully set forth herein.

206. The Manipulation Analysis indicates that Defendants' manipulative schemes violated Section 9(a)(2) of the Securities Exchange Act of 1934, which makes it unlawful to engage in a series of manipulative transactions "in any security . . . creating actual or apparent active trading in such security, or raising or depressing the price of such security, for the purpose of inducing the purchase or sale of such security by others."

207. The Manipulation Analysis also indicates that by reason of the conduct described above, Defendants directly used the mails, or instrumentalities of interstate commerce, or a facility of a national securities exchange, to: effect—alone or with one or more other persons—a series of transactions in Mullen shares that created actual or apparent trading in such securities or raising or depressing the price of such securities for the purpose of inducing the purchase or sale of such securities by others; and engage in the market manipulation strategy of spoofing which artificially affected the prices of Mullen shares that Mullen sold or issued for value during the Relevant Period.

208. The Manipulation Analysis also indicates that Defendants' conscious misbehavior or recklessness artificially affected the price of Mullen shares that Mullen and the Shareholder Plaintiffs sold during the Relevant Period.

209. The Manipulation Analysis further indicates that Clear Street Markets and Clear Street LLC conspired to jointly participate in the Clear Street spoofing schemes alleged in this Amended Complaint, and are thus jointly and severally liable for all Clear Street spoofing.

210. Plaintiffs' financial injuries would not have been as extensive but for the Defendants' conscious misbehavior or recklessness.

C. Third Claim for Relief for New York Common Law Fraud

211. Plaintiffs incorporate by reference paragraphs 1 to 210 as if fully set forth herein.

212. Plaintiffs seek to permanently enjoin Defendants from engaging in spoofing conduct—whether on their behalf or on behalf of their customers—that affects the Mullen share price. Defendants' actions identified herein have caused, continue to cause, and will cause future permanent and irreparable harm to Mullen.

213. Plaintiffs Hyon Cha and Shayan Khorrami presently own shares of MULN stock and thus still are and will continue to be harmed by Defendants' spoofing conduct.

214. The balance of the equities favors an injunction to prevent Defendants from continuing to spoof shares of MULN stock. The harm to Plaintiffs is significant. In contrast, the potential harm to Defendants of an injunction is insignificant; Defendants would merely be required to halt their illegal activity. Thus, the public interest is best served by enjoining Defendants' spoofing behavior.

215. As noted throughout this First Amended Complaint, it is likely that Plaintiffs will succeed on the merits in this case. All evidence to be presented, including trading records and

Defendants' own trading algorithms, will support the position that Defendants were manipulating the Mullen share price through spoofing.

216. As such, this Court should enter a permanent injunction enjoining Defendants from engaging in spoofing activities and any other illegal manipulative conduct that affects the Mullen share price.

VII. PRAYER FOR RELIEF

WHEREFORE, Plaintiffs respectfully request that this Court enter a judgment:

A. Finding that Defendants violated the federal securities laws as alleged in this First Amended Complaint;

B. Ordering Defendants to pay damages as a result of their unlawful conduct in an amount to be determined at trial;

C. Enjoining Defendants from engaging in any further manipulation of the share price of Mullen, whether on their behalf or their customers' behalf;

D. Awarding reasonable attorney's fees and costs together with all available pre- and post-judgment interest; and

E. Granting such other and further relief as the Court deems just and appropriate.

VIII. DEMAND FOR JURY TRIAL

Pursuant to Rule 38 of the Federal Rules of Civil Procedure, Plaintiffs demand trial by jury in this action of all issues so triable.

Dated: March 18, 2024
New York, New York

Respectfully submitted,

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